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Editorial / Editorial

Critical Care for Cancer Patients: A Global Challenge and a Need for Interdisciplinary Collaboration

El cuidado crítico para pacientes con cáncer: un desafío global y una necesidad de colaboración interdisciplinaria

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Cancer represents a global public health problem, and in developed countries it is projected to soon become the leading cause of death [1]. Advances in oncology have led to many patients, although not completely cured, living longer; thus, the number of people living with this condition will increase ass well as the number of oncology patients who will need to be admitted to the intensive care unit (ICU). Despite advances, cancer is still seen as a "fatal disease" and, in some regions, the admission of patients with cancer to the ICU is still limited or questioned, although many patients can be managed as chronically ill, and sometimes even cured. In fact, many nonmalignant diseases have a prognosis equally or more unfavorable than certain severe types of cancer [2]. The unique characteristics of critically ill patients with cancer underscore the need for dedicated approaches and areas of expertise for this population.

Since the 1950s, critical care has evolved considerably. Technological innovations, such as organic support systems (mechanical ventilation, dialysis, and extracorporeal membrane oxygenation), now make it possible to replace vital functions temporarily, complementing advances in the understanding of the pathophysiology of critical illness. Historically, oncology patients, especially those with solid tumors, were restricted access to the ICU. Intensivists were often hesitant to admit them due to limited knowledge about prognosis and treatment options in this population. Studies in intensive care show that a diagnosis of cancer increases the likelihood of refusal of admission to the ICU or limiting aggressive treatment almost sixfold [3]. However, recent advances in cancer therapies and intensive care have improved expectations for these patients.

Today, survival rates are on the rise thanks to early diagnosis and more specific and effective treatments with fewer adverse effects. This evolution is largely due to "precision medicine", which has enabled the development of anticancer treatments that offer a wide range of therapeutic options to oncologists [4]. Between 5% and 10% of oncology patients develop life-threatening conditions requiring admission to the ICU [5, 6, 7]. A study conducted in France showed that the percentage of admissions to the ICU for oncology patients ranged from 0.7% to 12%, with higher rates in cases of esophageal cancer, acute leukemias, and allogeneic bone marrow transplantation [8, 9]. Currently, oncologic patients account for 13.5% to 21.5% of all admissions to the ICU [10, 11]. At the end of the 20th century, survival rates for critically ill patients with cancer ranged from 20% to 30%; today, these rates have reached 50% to 60% [12, 13]. In our specialized oncology unit, survival is approximately 70%, thus approaching that of critical patients without cancer. This suggests that cancer itself is no longer a universal contraindication for admission to

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the ICU. This decision should be based on factors such as type and stage of cancer, response to previous treatments, functional and nutritional status, as well as patient and family preferences.

A review made in our unit revealed that patients with a higher ECOG (Eastern Cooperative Oncology Group Functional Status) score (limited functionality) had higher mortality rates, regardless of cancer type. Although many complications presented by critical oncology patients are common in patients without cancer, this population has specific characteristics, such as leukostasis, superior vena cava syndrome, and paraneoplastic autoimmune phenomena, among others. These patients benefit from joint management between oncologists, hematologists, oncologic surgeons, palliative care specialists, and intensivists, with vital support from experts in nutrition and physiotherapy [14]. Currently, some hospitals have implemented rapid response teams, composed of critical care physicians and/or nurses who assist the oncologist in identifying patients who would benefit from early transfer to ICU or more intensive room management. This approach has demonstrated a positive impact on mortality, as it allows intervention before irreversible organ failure [15, 16]. The integration of palliative care in the ICU is another key aspect, as it reduces the use of aggressive treatments in the end-of-life phase and improves the experience of patients and their families, thus facilitating the transition from curative intent to limiting therapeutic effort [17, 18].

As a conclusion, the rapid development of critical care medicine and oncology allows intensive care for oncology patients continue to evolve; therefore, the demand for intensive care in this population will increase. Comprehensive care of critically ill patients with cancer requires close collaboration between specialists in oncohematology, palliative care, and intensive care. This collaboration should start at hospitalization, allowing the prevention of irreversible organ failure and avoiding aggressive measures in patients with an unfavorable prognosis. The decision to admit patients to the ICU should be based on a set of criteria and should be taken as a team, in order to offer quality intensive care adapted to the needs and personal preferences of each patient.

1. Abbreviations

Does not apply.

2. Administrative information

2.1. Additional Files

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The author declares no conflicts of interest.

References

1. Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-Tieulent J, Jemal A. Global cancer statistics, 2012. CA Cancer J Clin. 2015;65: 87-108.
2. Tanvetyanon T, Leighton JC. Life-sustaining treatments in patients who died of chronic congestive heart failure compared with metastatic cancer. Crit Care Med. 2003; 31:60-4.
3. O'Brien JM, Aberegg SK, Ali NA, Diette GB, Lemeshow S. Results from the National Sepsis Practice Survey: Predictions about mortality and morbidity and recommendations for limitation of care orders [serial online]. Crit Care. 2009;13: R96.
4. Schwaederle M, Zhao M, Lee JJ, Eggermont AM, Schilsky RL, Mendelsohn J, et al. Impact of precision medicine in diverse cancers: A meta-analysis of phase II clinical trials. J Clin Oncol. 2015; 33:3817-25.
5. Azoulay E, Thiery G, Chevret S, Moreau D, Darmon M, Bergeron A, et al. The prognosis of acute respiratory failure in critically ill cancer patients. Medicine (Baltimore). 2004; 83:360-70.
6. Puxty K, McLoone P, Quasim T, Sloan B, Kinsella J, Morrison DS. Risk of critical illness among patients with solid cancers: A population-based observational study. JAMA Oncol. 2015;1:1078-85.
7. Gordon AC, Oakervee HE, Kaya B, Mason N, Sizer B, Chopra R, et al. Incidence and outcome of critical illness amongst hospitalised patients with haematological malignancy: A prospective observational study of ward and intensive care unit based care. Anaesthesia. 2005; 60:340-47.
8. Bos MM, Verburg IW, Dumaij I, de Keizer NF, de Jonge E, de Vos R, et al. Intensive care admission of cancer patients: a comparative analysis. Cancer Med. 2015;4:966-76.
9. Benz R, Schanz U, Maggiorini M, Seebach JD, Stussi G. Risk factors for ICU admission and ICU survival after allogeneic hematopoietic SCT. Bone Marrow Transplant. 2014;49:62-65.
10. Taccone FS, Artigas AA, Sprung CL, Moreno R, Sakr Y, Vincent JL. Characteristics and outcomes of cancer patients in European ICUs [serial online]. Crit Care. 2009;13:R15.
11. Soares M, Caruso P, Silva E, Teles JM, Lobo SM, Friedman G, et al. Characteristics and outcomes of patients with cancer requiring admission to intensive care units: A prospective multicenter study. Crit Care Med. 2010;38:9-15.
12. Pene F, Percheron S, Lemiale V, Viallon V, Claessens YE, Marqué S, et al. Temporal changes in management and outcome of septic shock in patients with malignancies in the intensive care unit. Crit Care Med. 2008;36:690-96.
13. Benoit DD, Soares M, Azoulay E. Has survival increased in cancer patients admitted to the ICU? We are not sure. Intensive Care Med. 2014; 40:1576-79.
14. Kim MM, Barnato AE, Angus DC, Fleisher LF, Kahn JM. The effect of multidisciplinary care teams on intensive care unit mortality. Arch Intern Med. 2010; 170:369-76.
15. Parmar A, Richardson H, McKinlay D, Gibney RT, Bagshaw SM. Medical emergency team involvement in patients hospitalized with acute myeloid leukemia. Leuk Lymphoma. 2013; 54:2236-42.
16. Tam B, Salib M, Fox-Robichaud A. The effect of rapid response teams on end-oflife care: A retrospective chart review. Can Respir J. 2014; 21:302-06.
17. Greer JA, Jackson VA, Meier DE, Temel JS. Early integration of palliative care services with standard oncology care for patients with advanced cancer. CA Cancer J Clin. 2013; 63:349-63.
18. Jang RW, Krzyzanowska MK, Zimmermann C, Taback N, Alibhai SM. Palliative care and the aggressiveness of end-of-life care in patients with advanced pancreatic cancer. J Natl Cancer Inst. 2015;107(1):dju424.

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Case report / Caso clínico

Mediastinal mature cystic teratoma in an adolescent patient. Case report and literature review

Teratoma quístico maduro de mediastino en un paciente adolescente: reporte de caso y revisión de la literatura

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ABSTRACT
Introduction: Mediastinal mature cystic teratoma is a primary germ cell neoplasm with benign features. It is composed of fully differentiated tissues derived from more than one of the three embryonic germ cell layers and occurrs mainly in adolescents and young adults. They appear most frequently in the anterior compartment, secondarily at the level of the thymus and rarely in the posterior compartment. **Clinical case:** We present the case of a 13-year-old adolescent patient with an apparent mediastinal tumor, which caused moderate chest pain, dyspnea on moderate exertion accompanied by asthenia and progressive weight loss. **Treatment:** Total resection of the anterior mediastinal tumor is performed, which confirms the histopathological diagnosis of solid cystic mature tridermal cystic teratoma of the mediastinum, with negative lymph nodes for malignancy. **Conclusion:** Mature cystic teratoma is the most frequent pathology of mediastinal tumors, of benign characteristics, with non-specific symptomatology. Surgical resolution remains the gold standard in terms of treatment, with low recurrence rates after complete surgical resection and with good short, medium, and long term prognosis.

Keywords: MeSH: Mature Cystic Teratoma, Germinal Tumor, Mediastinal Lesion, Adolescent.

RESUMEN
Introducción: El teratoma quístico maduro de mediastino es una neoplasia de las células germinales primarias de características benignas, compuesta de tejidos completamente diferenciados, derivados de más de una de las tres capas de células germinales embrionarias, que aparece principalmente en adolescentes y adultos jóvenes. Se presenta con mayor frecuencia en el compartimento anterior, en segundo lugar, a nivel del timo y, rara vez, en el compartimento posterior. **Caso clínico:** Se expone el caso de un paciente adolescente de 13 años con aparente tumoración en mediastino que produce dolor torácico moderado, disnea de moderados esfuerzos acompañada de astenia y pérdida progresiva de peso. **Tratamiento:** Se realizó resección total de tumor de mediastino anterior, el cual confirmó el diagnóstico histopatológico de teratoma sólido quístico maduro tridérmico de mediastino con ganglios linfáticos negativos para malignidad. **Conclusión:** El teratoma quístico maduro es la patología más frecuente de los tumores mediastinales de características benignas con sintomatología inespecífica. La resolución quirúrgica sigue siendo el GOLD estándar, con poca tasa de recurrencia después de la resección quirúrgica completa y un buen pronóstico a corto, mediano y largo plazo.

Palabras Clave: DeCS: Teratoma quístico maduro, Tumor germinal, Lesión mediastinal, Adolescente.

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1. Introduction

Mediastinal thoracic neoplasms can occur in different compartments: anterior, middle, and posterior [1,5]. The anterior mediastinum is usually the seat of several types of neoplasms, germ cell tumors constitute 10% to 15% of them [1].

Teratoma is the most common germ cell tumor; it is characterized by the presence of tissues of origin from more than one of the three embryonic sheets. They account for 15% of such mediastinal germ cell tumors and usually occur in the anterior mediastinum near the thymus [2,10]. The incidence of teratomas is approximately 1 in 4,000 live births worldwide [3]. They mainly affect adolescents and young adults, with no sex predominance [4,5]. The clinical picture when it appears presents with a sudden onset of shortness of breath [6], with the most frequent symptoms being the product of chest compression such as cough, pain, lung infection, and dyspnea (or both) [7,8]. Most patients with mediastinal masses are asymptomatic and are only discovered by chance or incidentally [9]. Diagnosis is usually made with routine chest radiography (X-ray); however, other diagnostic methods are preferred, such as thoracic CT, magnetic resonance imaging (MRI), and even positron emission tomography (PET/CT). Radiologically, teratomas are characterized by rounded, lobulated, well-defined, anterior mediastinal masses that generally insinuate towards one side of the midline [10, 11].

The treatment of choice is undoubtedly surgical, with favorable prognosis [12]; therefore, surgical excision or total or complete resection of the tumor, including the tissues adherent to it, is preferred [13, 15].

The aim of this article is to report the case of a mediastinal mature cystic teratoma in an adolescent patient, along with the concerning exhaustive review of the literature regarding the subject.

2. Case Report

We present the case of a 13-year-old adolescent male with no pathological history of importance, who was transferred from another health center for presenting an apparent mediastinal tumor under study. It produced moderate chest pain, dyspnea on moderate exertion about 2 months ago and exacerbated in recent weeks accompanied by asthenia and progressive weight loss. No accompanying neurological or digestive symptoms or signs were evident. The patient initially underwent a chest X-ray and chest CT S/C, without a definitive diagnosis. These reported mediastinal mass with probable origin of Hodgkin's lymphoma.

On physical examination, there was palpable left submaxillary adenopathy and decreased bladder murmur in the right lung field with no intercostal pull.

2.1. Diagnostic workshop

The patient was evaluated by the Pediatrics and Thoracic Surgery service, under the presumptive diagnosis of mediastinal tumor of uncertain behavior, some complementary tests were requested, including paraclinical laboratory studies, a Chest X-ray (RX), spinal cord biopsy and Positron Emission Tomography (PET/CT). In the paraclinical laboratory studies, it was evidenced that the hemogram, blood biochemistry, coagulation times parameters performed in the Clinical Laboratory Department of SOLCA-Guayaquil were within normal ranges.

Special laboratory studies were also performed, which were within acceptable parameters and consisted of:

Human Chorionic Gonadotropin (HCG): 0.20 mIU/ml, Alpha Feto Protein: 1.14 IU/ml, Lactate dehydrogenase (LDH): 270 U/l.

The report of the standard and lateral Chest X-ray (RX) identified a radiopaque lesion observed in the upper and middle third of the right hemithorax with base in the mediastinum with partially defined lobulated contours. It does not cause displacement of the main bronchi and heart, measures approximately 12 x 10 cm in major axes, and is associated with increased density of hilar structures (Figure 1).

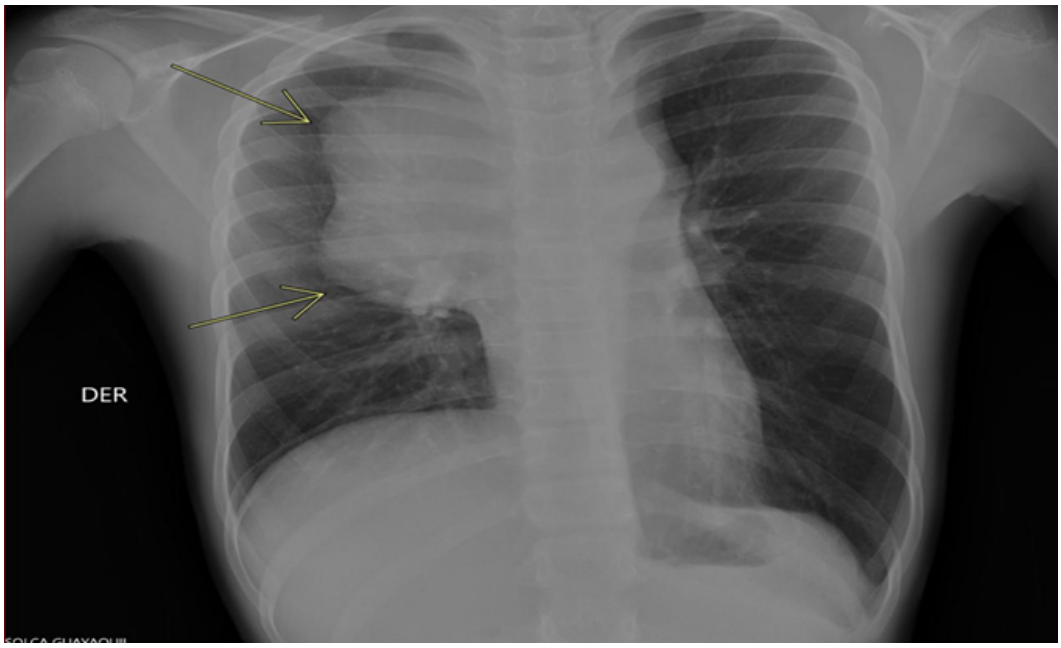
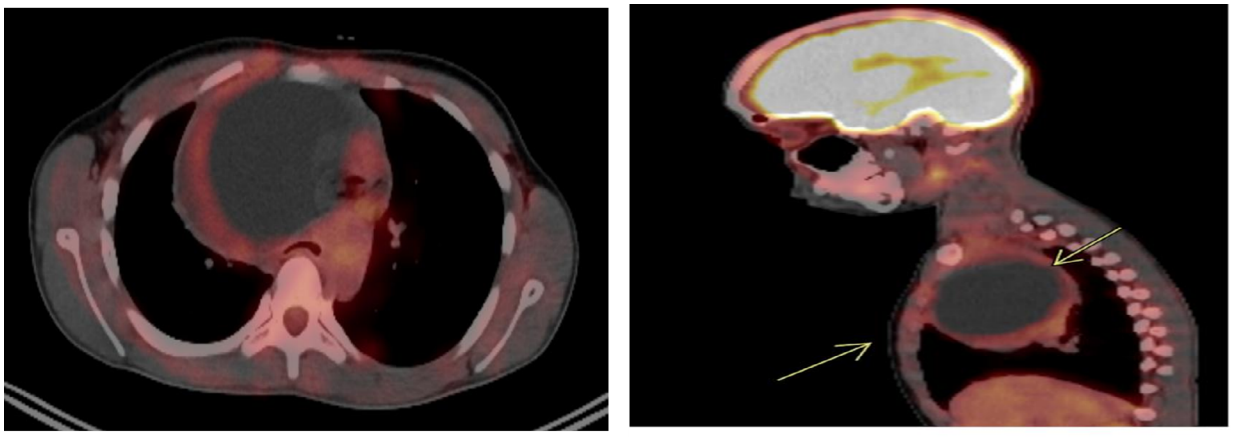


Figure 1. Standard and lateral chest X-ray showing radiopaque lesion in the upper and middle third of the right hemithorax.
Source: Department of Radiology and Imaging.

The bone marrow biopsy reported hypocellular bone marrow, free of neoplastic infiltration. Subsequently, it is evaluated with the results of complementary examinations. Since there was not a conclusive and definitive diagnosis, it is decided to plan for surgical procedure: thoracotomy vs sternotomy + tumor resection as a priority, in order to define the morphological and anatomical characteristics of the lesion and its relationship with adjacent structures. Additionally, it was requested to rule out a mediastinal mass vs Hodgkin's lymphoma, an oncological examination PET/CT, which reported single polylobulated, heterogeneous mass in the chest, with variable density (liquid, soft tissue and fat) with calcification in its wall. It measures approximately 7.3 x 11.3 x 11.3 x 16.6 cm, and it rejects but does not infiltrate neighboring structures (thyroid, trachea, esophagus, aortic arch) with hypermetabolism in its wall (Figure 2).

A.



B.

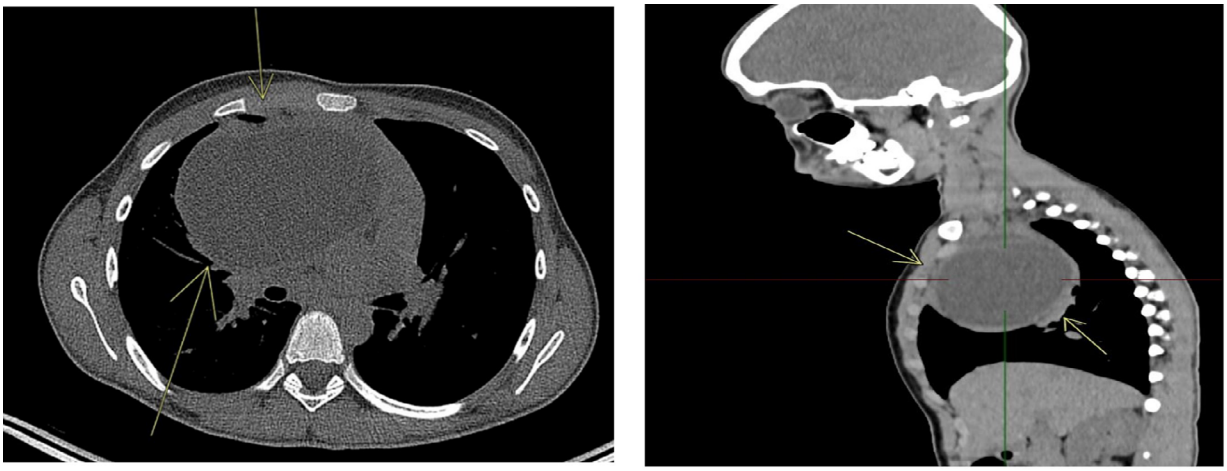


Figure 2. PET/CT. **A.** PET/CT. A. Axial section where the arrow shows a single polylobulated mass measuring 7.3 x 11.3 x 16.6 cm. **B.** Sagittal view showing with the arrow a single polylobed mass measuring 7.3 x 11.3 x 16.6 cm.
Source: Department of Radiology and Imaging.

2.2. Treatment and evolution

The patient underwent sternotomy + total resection of anterior mediastinal tumor + biopsy + placement of right chest tube. The surgical procedure lasted 4 hours, with an approximate bleeding of 600 ml. An incision was made in the midline of the sternum, finding intraoperatively: tumor in the anterior mediastinum region attached to the superior vena cava, with macroscopic characteristics: oval, brown, rough surface, irregular edges, multilobulated, measuring approximately 17.2 x 12.1 x 4.8 cm. A whitish pedunculated cystic formation measuring 4.5 x 3.3 x 2.3 cm with a rough surface with hairs was observed (Figure 3). In addition, during surgery, probable lymph nodes are isolated, measuring 0.7 x 1.5 cm.

The pathology report of the surgical specimen showed solid tridermal mediastinal mature cystic teratoma. The pathology study of the isolated lymph nodes revealed lymph nodes (3) negative for malignancy.

Cytology of the mediastinal tumor fluid reported hemorrhagic smear with isolated inflammatory cells (neutrophils), negative for malignancy.

Total exeresis of the solid tridermal mediastinal mature cystic teratoma was performed, with successful release of the superior vena cava adhesion, which was found to be undamaged, with no intraoperative complications, nor were there any complications in the postoperative period. Due to the complexity of the procedure, the postoperative period was managed in a multidisciplinary way by the Pediatrics Service and the Thoracic Surgery Service. The patient was initially admitted to the Pediatric ICU, where he remained 4 days after surgery, with the presence of a right chest tube with daily quantification placed in the operative room. It was removed on the sixth postoperative day when adequate bilateral pulmonary expansion was evidenced.

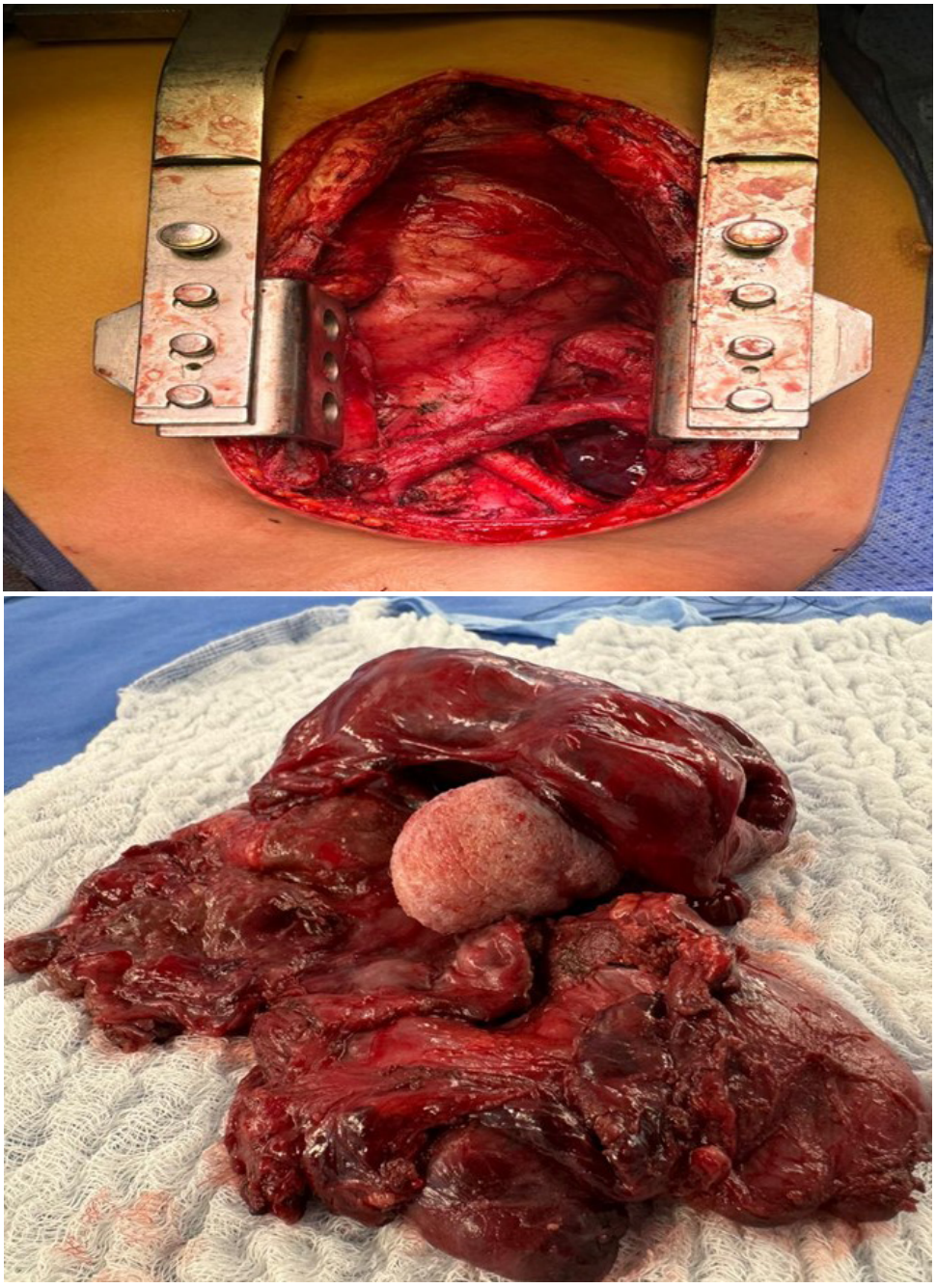


Figure 3. Intraoperative findings of anterior mediastinal tumor exeresis.
Source: SOLCA-Guayaquil.

Finally, the patient was discharged on the ninth postoperative day without apparent postoperative complications. He consulted our service during the first three subsequent weeks, in which surgical wounds in good healing process, no signs of infection, with relative improvement of the initial symptomatology were evidenced. A control chest X-ray was performed, which reported no evident active lesions in the pulmonary parenchyma, free cost and cardiophrenic angles, no anomalous elevation of the diaphragmatic domes, osteosynthesis material in sternal topography and epigastrium (Figure 4).

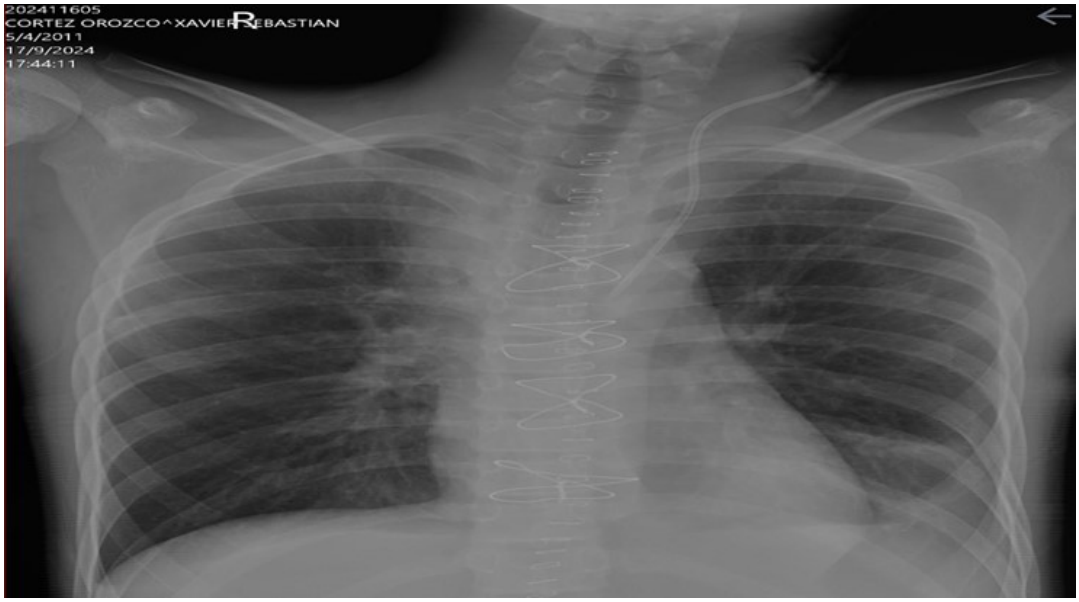


Figure 4. Radiographic control of postoperative evolution of anterior mediastinal tumor exeresis
Source: SOLCA, Guayaquil.

Continuing with the clinical follow-up, the patient is scheduled for subsequent controls with high resolution thoracic CT scan, performed two months after surgery, showing no tumor recurrence. Having negative tumor markers, negative spinal studies, the patient does not receive specific oncologic adjuvant treatment. To date, he attends periodic controls at the Thoracic Surgery Service.

3. Discussion

Primary germinal tumors of the mediastinum have been classified into three main groups: teratomas, seminomas, and non-seminomatous tumors. Histologically they are classified into two groups: benign (mature teratoma) and malignant (immature teratoma) and teratoma with malignant component and teratoma with embryonal cell carcinoma [14].

Teratoma is a primary neoplasm with benign characteristics of germ cells of fully differentiated tissues derived from more than one of the three embryonic germ cell layers: ectoderm, mesoderm, and endoderm [1]. Of all primary germ cell tumors of the mediastinum, the most frequent is mature teratoma [2,8]. The frequency of mediastinal teratomas ranges from 1% to 5% [3,21]. They occur in young adults between the second and fourth decades of life, with equal frequency for both sexes [4,6]. Depending on the degree of differentiation their appearance can range from benign to malignant tumors and have cystic or solid areas, or both, of different sizes. This can be distinguished in their content [4]. Most mature or benign teratomas are cysts (dermoid) and contain well-differentiated somatic elements, such as hairs, fat, skin and cartilage [5]. According to the World Health Organization (WHO), mediastinal teratomas, according to their location, occur most frequently in the anterior compartment (prevascular); secondly, at the level of the thymus, and rarely in the posterior compartment [5].

Symptomatology is nonspecific, it may be asymptomatic or when symptoms are present, they may be due to compression, invasion of adjacent structures or secondary infection, including dyspnea, chest pain, cough, fever, weight loss, superior vena cava syndrome, dysphagia, orthopnea, hemoptysis and, rarely, cardiac tamponade [6,7,17]. There may also be nonspecific chest pain or pleural pain when intercostal nerves are involved [6,13,27]. However, tumor rupture in the bronchial tree may produce hemoptysis and cough with expectoration of hair or sebaceous material, indicating a fistula between the tumor and the tracheobronchial tree, which is pathognomonic of a teratoma [7,10,16]. In our patient, the most striking symptomatology was dyspnea, chest pain, and progressive weight loss, the latter being a more specific symptom, but not conclusive of a tumor of malignant origin or invading adjacent structures.

Laboratory tests are usually normal, with serum levels of human chorionic gonadotropin and alpha-fetoprotein being normal in patients with benign teratomas, but the immaturity of the histopathological elements present in the tumor, as well as elevated blood levels of alpha-fetoprotein hormone, are indicators of worse prognosis [1,8,12]. According to the literature consulted, tumor marker assays are crucial, as they can indicate the presence of a malignant component, such as seminomas or nonseminomatous germ cell tumors. Lactate dehydrogenase levels are also evaluated in cases where lymphomas are suspected [9,20]. In our patient, the results of these tumor markers yielded normal results.

The diagnosis is usually made by chance on routine radiography [10]. Chest radiography, in postero-anterior and lateral projections, is the initial radiological examination for mediastinal tumors [11,14]. Radiology examinations usually reveal a well-circumscribed mediastinal mass that often protrudes into one of the lung fields [12].

To complement the radiological diagnosis, a computed tomography (CT) scan of the chest should be performed, which provides information on tissue density and tumor delineation. Mature teratomas usually appear on CT as an anterior mediastinal mass containing soft tissue, fluid, fat or calcium deposits [13,17]. Pleural effusion can also be found on this imaging method and is more common in ruptured mediastinal teratomas [12].

Homogeneity or heterogeneity on chest CT enables distinguishing between ruptured and unruptured teratomas [13,15]. Magnetic resonance imaging (MRI) can also be used because it assesses the anatomic relationships with adjacent structures and allows safer and more appropriate planning of the surgical approach and tumor resectability [16].

Positron emission tomography (PET/CT) is an objective and useful modality in the differential diagnosis and treatment of anterior mediastinal tumors, including teratomas [14,17]. In our specific case, PET/CT was used as an adjunctive examination because high-resolution chest CT was not immediately available and considering that a mediastinal mass with probable Hodgkin's lymphoma origin was initially thought to be present.

A wide range of conditions can be considered in the differential diagnosis of a lesion containing heterogeneous fat in the anterior mediastinum. In distinguishing between mature cystic teratomas and other entities such as mediastinal lipoma, mediastinal lipomatosis, thymoma, liposarcoma, may also include hydatid cyst, lung abscess and parenchymal lung tumor [16] the presence of calcification and fluid elements is a key distinguishing factor [17,18].

The diagnosis of mature cystic teratomas is confirmed by anatomopathologic examination, which also provides valuable information on the extent of resection [19,22].

Surgical treatment is the gold standard, since mature teratomas are usually curable by complete excision of the tumor. However, it should be kept in mind that a thorough pathologic review is mandatory and definitive to exclude other differential diagnoses, such as small immature tissue tumors, other germ cell tumors or carcinomas [3,7,23].

The most frequently used access route is the median sternotomy [22,25], which helps to avoid complications such as compression of adjacent structures, rupture (rare) into the lung or bronchial tree, with consequent hemoptysis into the pleural or pericardial spaces and less common malignant transformation [1,26]. In cases where the tumor is localized to a specific hemithorax, an anterolateral thoracotomy is often favored. While complete removal of the tumor is generally achievable, it can be challenging because it is often found adherent to neighboring structures such as the thymus, pleura, and pericardium. In some cases, endoscopic removal may be a viable option for small tumors [23,28]. In our particular case, a median stereotomy with complete surgical excision was performed, without apparent complications, since the surgical specimen, despite its large size and adherence to the vena cava, was completely excised.

There are several complications of the surgical technique, such as infection at the surgical site, empyema, sepsis, and death due to the large size of the tumor and its adhesion to the surrounding organs [24,25]. Other complications included persistent atelectasis and rupture in some area of cystic mass during difficult dissection with tumor content material [26].

The prognosis of mature mediastinal teratomas is good after complete resection. Recurrences are rare, and are associated with incomplete tumor resection [12,27,30]. In children, the postoperative prognosis for mature teratomas is typically favorable, with a survival rate exceeding 96 % [28].

Long-term clinical, laboratory, and imaging surveillance is necessary for individuals who have undergone surgical removal (resection) of a mediastinal teratoma. This surveillance should be performed at shorter intervals for the first 5 years after surgery and then annually thereafter [9, 29].

4. Conclusions

Mature cystic teratoma is the most frequent pathology of mediastinal tumors, which presents with very nonspecific symptomatology, especially in adolescent patients, such as the patient in our clinical case. Total or complete surgical resection is the ideal treatment, with low recurrence rates and good short, medium and long term prognosis.

This particular case highlights the importance of considering mediastinal mature cystic teratoma among the most frequent pathologies of the mediastinum that should be studied to have adequate management and clinical follow-up. In this context, it is of utmost importance to have a correct diagnostic and therapeutic approach, which will allow proposing a series of similar clinical cases as multicenter studies for future medical research.

Abbreviations

PET CT: Positron Emission Tomography

CT: Computed Axial Tomography

MRI: Magnetic Resonance Imaging

RX: X-ray

5. Administrative Information

5.1. Additional Files

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5.5 Availability of data and materials

Data are available on request from the corresponding author. No other materials are reported.

5.6 Statements

5.6.1 Informed consent

The patient's legal guardians gave written informed consent for publication of this case report and accompanying images. The Editor-in-Chief of this journal has a copy of the written consent for review.

5.6.2 Conflicts of Interest

The authors declare that they have no conflicts of competence or interest.

References

1. Masdeu M, Nuñez T, Torres R, Codinado C, Portas T. Teratoma mediastinal con áreas de malignidad, reporte de un caso y discusión. Rev Am Med Respir. 2022; 22(1):57-61.
2. González P, Colmenares J, Sentelices M, Pérez L. Resección completa en dos tiempos de teratoma quístico gigante del mediastino que debuta con compromiso vital. Rev Cir 2023; 75(3):190-193.
3. Barabrah AM, Zaben B, Tuqan AR, Sala O, Hakam Shehadeh M, Eideh H, et al. Mature Cystic Teratoma of Anterior Mediastinum in a Child: A Case Report and Literature Review. J. Investig. Med. High Impact Case Rep. 2024; 12. DOI:10.1177/23247096241274510
4. Fuentes E, Pérez K. Teratomas gigantes en tórax. Neumol Cir Torax. 2018; 77(3):209-212.
5. Aguiñaga O, Maldonado F. Teratoma maduro mediastinal. Tratamiento con radioterapia externa hipofraccionada: reporte de caso. Gact Mex Oncol. 2023; 22:116-120. DOI: 10.24875/j.gamo.23000142
6. Ram D, Sharma DK, Darlong LM, Rajappa SK, Bhakuni YS. Mediastinasl teratoma with pulmonary parenchyma fistula: a rare diagnostic endeavour. J Clin Diagn Res. 2017; 11(8):XD03-XD04. DOI: 10.7860/JCDR/2017/28238.10438
7. Ghareeb A, Al Sharif F, Alyousbashi A, Dawarah M, Ghareeb A, Dalati H. Mediastinal mature cystic teratoma in a child: A case report study. Int J Surg Case Rep. 2023; 103:107904. DOI: 10.1016/j.ijscr.2023.107904
8. Alonso G, Suárez Y. Teratoma Mediastinal: informe de caso. Acta méd centro. 2018; 12(1):70-74.
9. Kebalo SP, Lamboni D, Guedenon KM, Amegbor K, Gnassingbe K. Mature teratoma of the mediastinum in children: a case revealed by persistent chest pain. J Pediatr Surg Case Rep. 2022; 78:102209. https://doi.org/10.1016/j.epsc.2022.102209
10. Arce-Aranda C, Ayala-Guzmán JD, Cuevas-Zapata JF, Duarte-González AL, Garay-Gómez CD, Gutiérrez-Codas GM, et al. Frequency, classification and pathology of mediastine tumors. Rev Cir Parag [En línea]. 2018; 42(2):17-22. DOI: 10.18004/sopaci.2018.agosto.17-22
11. López M, Silva O, Carvajal A. Teratoma gigante de mediastino anterior con taponamiento cardiaco. Rev Med Hered. 2012; 23(3):199-203.
12. Raoufi M, Herrak L, Benali A, Achaachi L, El Ftouh M, Bellarbi S, et al. Mediastinal mature teratoma revealed by empyema. Case rep pulmonol. 2016; 1-4. https://doi.org/10.1155/2016/7869476
13. Fuentes E. Teratomas del mediastino. Rev Cubana Cir. 2020; 59(3): 1-15.
14. Kuroda H, Hashidume T, Shimanouchi M, Sakao Y. Resection of a ruptured mature cystic teratoma diagnosed two years after the onset of perforation. World J Surg Oncol. 2014; 12:321-323. DOI: 10.1186/1477- 7819-12-321
15. García H, Borrazas M, Fernandez M. Teratoma mediastinal anterior. Rev. cuba. med. mil. 2016; 45(2): 229-234.
16. Pamo-Reyna OG, Bendezu-Huasasquiche LE, Chian-García C. Teratoma quístico maduro mediastínico que se presenta como hemoptisis. Rev Soc Peru Med Interna. 2018; 31(1):27-30.
17. Sato D, Izu A, Sakakibara M, Hayashi S, Kawachi R, Shimamura M, et al. A neuroendocrine tumor within an anterior mediastinal mature teratoma: a case report. J Cardiothorac Surg. 2022; 17:333. DOI: 10.1186/s13019-022-02091-3
18. Peterson CM, Buckley C, Holley S, Menias CO. Teratomas: a multimodality review. Curr Probl Diagn Radiol. 2012; 41(1):210-219.

19. AlHarbi KM, Sairafi MH, Almuzaini SA. Mature cystic teratoma of mediastinum compressing the right atrium in a child: a rare case report. J Taibah Univ Med Sci. 2017; 12(6):555-560. https://doi.org/10.1016/j.jtumed.2017.06.007

20. Yasa KP, Permana AACT, Dewi SM. Mediastinal benign mature teratoma in young girl, catastrophic delayed and complications of surgery: a case report. Open Access Maced J Med Sci. 2020; 8:201-204. https://doi.org/10.3889/oamjms.2020.3363

21. Varma AV, Malpani G, Agrawal P, Malukani K, Dosi S. Clinicopathological spectrum of teratomas: An 8-year retrospective study from a tertiary care institute. Indian J Cancer. 2017 Jul-Sep;54(3):576-579. DOI: 10.4103/ijc.IJC_294_17

22. Nusjirwan R, Hermawan K, Dewi M, Nugraha HG, DewaYani BM, Nataprawira HM.S. Mediastinal teratoma in a children: a case series of misdiagnoses in a high-endemic tuberculosis setting. Int J Surg. 2023; 116:109307. https://doi.org/10.1016/j.ijscr.2024.109307

23. Liew WX, Lam HY, Narasinmamman S, Navarasi S, Mohd Hamzah K. Mediastinal mature teratoma in a child: a case report. Med J Malaysia. 2016; 116:109307.

24. Anand S, Longia S, Agarwal N, Maheshwari M, Apte A, Pathak K. Mature mediastinal teratoma. A rare cause of recurrent respiratory distress. Peoples J Sci Res. 2010; 3:33-35.

25. Rodríguez López-Calleja CA, Mayea Sánchez F, González Zayas A, López Marín L. Resección por toracoscopia del teratoma mediastinal. Rev Cubana Cir. 2015; 54(1):43-49.

26. AlHarbi KM, Sairafi MH, Almuzaini SA. Mature cystic teratoma of mediastinum compressing the right atrium in a child: a rare case report. J Taibah Univ Med Sci. 2017; 12(6):555-560. https://doi.org/10.1016/j.jtumed.2017.06.007

27. Agarwal S, Mullick S, Gupta K, Dewan RK. Mediastinal Teratoma with Coexisting Adenocarcinoma and Carcinoid Tumor (Somatic-Type Malignancy): A Case Report with a Review of the Literature. Turk Thorac J. 2015; 16(2):101-4. DOI: 10.5152/ttd.2014.4280

28. Nozaki I, Tone Y, Yamanaka J, Uryu H, Shimizu-Motohashi Y, Sato N, et al. A Case of Malignant Melanoma Arising in Mediastinal Malignant Teratoma. Case Rep Pediatr. 2018; 1:1-5. DOI: 10.1155/2018/1306824

29. Al Smady M, Zahari NNB, Mohd Sahid NSB, et al. Anterior mediastinal teratoma with pericardial effusion. Rare presentation. J Surg Case Rep. 2019; 5(1):1-3. https://doi.org/10.1093/jscr/rjz136

30. Ruiz M, Zarate L, Alfonso J, Polo F. Teratoma del mediastino anterior. Repert. med. cir. 2012; 21(2):132-135. https://doi.org/10.31260/RepertMedCir.v21.n2.2012.808

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Case report / Reporte de caso

Sarcoma of interdigitating dendritic cells. Case report

Sarcoma de células dendríticas interdigitantes. Reporte de caso

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ABSTRACT
Dendritic cells, essential in the immune response by presenting antigens to T and B lymphocytes, can develop extremely rare neoplasms, representing less than 1% of lymph node-originating tumors. We present a case of interdigitating dendritic cell sarcoma that, treated with chemotherapy, showed favorable progression and a good prognosis. Due to the rarity of this disease, it is crucial to consider it in differential diagnoses, as patient survival depends on the stage at which it is detected

Keywords: Case report, Immunohistochemistry, Dendritic cells, PET CT (F18-FDG).

RESUMEN
Las células dendríticas, fundamentales en la respuesta inmune al presentar antígenos a los linfocitos T y B, pueden desarrollar neoplasias extremadamente raras, que representan menos del 1 % de los tumores de origen ganglionar. A continuación, se presenta un caso de sarcoma de células dendríticas interdigitantes que al ser tratado con quimioterapia mostró una evolución favorable y un buen pronóstico. Debido a la rareza de esta enfermedad, es crucial considerarla en el diagnóstico diferencial, pues la supervivencia del paciente depende del estadio en el que se detecte.

Palabras Clave: reporte de caso clínico, inmunohistoquímica, células dendríticas, PET CT (F18-FDG).

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1. Introduction

Interdigitating dendritic cell sarcoma (IDCS) is a rare hematologic neoplasm with a complex diagnosis, often confused with other types of neoplasms, which leads to delayed diagnosis and an unfavorable prognosis for the patient. Here, we present a case of a 68-year-old female patient, initially suspected of having colon cancer. However, through histopathological studies, it was determined that she had a lymphoid neoplasm compatible with the disease described in this case report. This article details the diagnostic process, oncological management, treatment response, and current status, as well as a brief review of the topic to help readers understand the medical decisions made.

2. Case Report

A 68-year-old female patient with a history of hypertension, a colon tumor under investigation, and current pharmacological treatment with losartan. She also has a history of traumatic elbow fracture managed with a prosthesis and is a former smoker. She showed up at the emergency department with a two-month history of progressive abdominal pain associated with asthenia, adynamia, and pallor. Upon physical examination at admission, the abdomen showed no distension, positive peristalsis; it was soft, depressible, and tender to deep palpation in the left hemiabdomen. A palpable, hard, mobile mass was noted in the left hypochondrium without signs of peritoneal irritation. Hospital admission was decided for further studies. The patient provided a pathology report from a colonoscopy biopsy: "Distal ileum biopsies. Benign nodular lymphoid hyperplasia with focal villous atrophy and moderate chronic ileitis; ascending colon with polypectomy of a tubular adenoma with low-grade dysplasia." Contrast-enhanced abdominal and pelvic CT scan revealed retroperitoneal and mesenteric adenopathy suggestive of infiltrative neoplastic disease, along with thickening of the walls of the right colon. Based on these findings, inpatient management was deemed necessary. Additional laboratory tests documented elevated CA125, fibrinogen, and coagulation times. The infectious profile was negative, and results for folic acid, ESR, reticulocyte percentage, total proteins, and tumor lysis laboratory values were within normal ranges. Given these findings, an initial suspicion of lymphoproliferative disease with possible extranodal involvement was considered. Hematology was consulted, the initial clinical suspicion was confirmed and further extension studies were recommended, including:

- **July 22, 2021, PET-CT (F18-FDG):** Supra- and infra-diaphragmatic hypermetabolic lymphadenopathies, suggesting glycolytic tumor activity; consideration of lymphoproliferative disease, diffuse thickening of the right ascending colon wall, and diffuse FDG uptake in the axial skeleton (Figure 1).
- **July 29, 2021, Flow Cytometry on Bone Marrow:** No cell populations were identified that expressed immunophenotypes associated with hematologic neoplasms.
- **February 2022, Cytogenetics on Bone Marrow**:
    - Sample Results: 46, XX
    - Interpretation: No neoplastic clones were detected. This result does not exclude a hematologic neoplasm.
    - Observation: Occasional chromosomal breaks were noted. A metaphase 92, XXXX, -4, +6, -8, -11, +16, +17, -19, -19, +22 was observed. No translocations were described.
    - Cell Notes: Estimated resolution of banding: 475.

BONE MARROW BIOPSY

Pathology Report (September 4, 2021):

- **Macroscopic Description:** A paraffin block labeled as BR-1877-21 was received.
- **Microscopic Description:** The sections show a bone marrow core with an approximate cellularity of 40%, with megakaryocytes present and evidence of maturation across all cell lines. No blasts

are observed, and there is no abnormal presence of lymphoid or plasmacytic populations, which is confirmed by immunoperoxidase markers for CD34, CD20, CD3, and CD38.

- **Diagnosis:** Normal hematopoiesis of the three cell lines.

Immunohistochemistry Report (September 7, 2021):

- **Macroscopic Description:** Tissue embedded in paraffin, labeled #1453-21 A1, was received for study via immunohistochemistry.
- **Microscopic Description:** The problematic population is positive for CD45, VIMENTIN, S100, and CD20. It is negative for PANCYTOKERATIN and HMB45. These findings suggest a lymph node pathology compatible with interdigitating dendritic cell sarcoma of cervical lymph nodes. The case was reviewed in a pathology board, requiring an expanded marker panel to exclude other differential diagnoses. Metastases of epithelial and melanocytic origin were excluded.
- **Conclusion:** Block #1453-21 A1; Immunohistochemistry: Compatible with **INTERDIGITATING DENDRITIC CELL SARCOMA (IDCS).**

With these findings and the relevant clinical analysis, the diagnosis of IDCS was considered at the time, and treatment was initiated. The patient underwent 6 sessions of R-CHOP chemotherapy. Flow cytometry in the bone marrow showed aberrant plasma cells at 0.11%, and a PET-CT (F18-FDG), when compared to the initial study, reported resolution of supra- and infra-diaphragmatic adenopathy (See Figure 1). The scan also showed an iliac internal chain adenopathy with FDG uptake, surpassing liver uptake, which, based on Deauville criteria, scored a 4, thus indicating a partial response to treatment.

As a result, the treating hematologist recommended a second-line chemotherapy regimen (RICE) for 3 cycles. At the end of these sessions, a follow-up PET scan revealed the resolution of adenopathy in the obturator chain (Figure 3), demonstrating a complete metabolic response. Based on these findings, the patient was declared in remission. Given the favorable evolution, maintenance immunotherapy was initiated with a standard-dose Rituximab regimen for low-grade lymphoma, administered every 2 months for 2 years. As for the writing of this report, the patient has successfully completed 9 cycles and remains in remission.

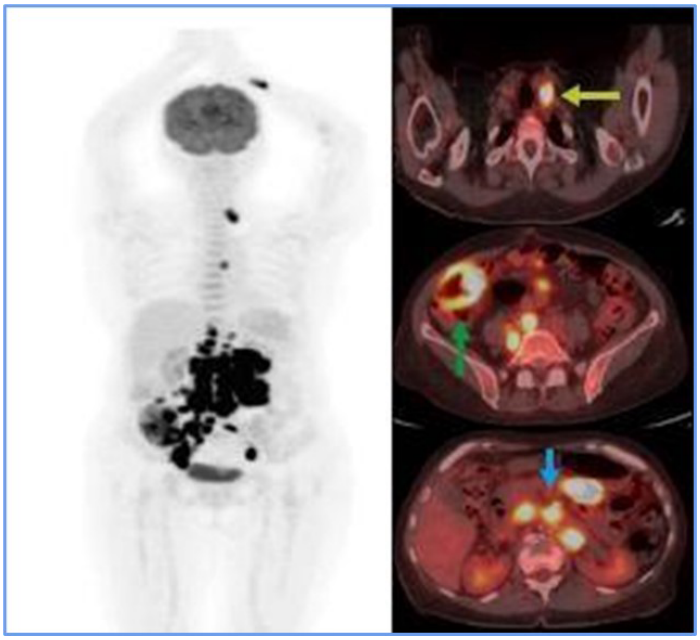

Figure 1. Initial PET CT. Hypermetabolic supra (yellow arrow) and infra diaphragmatic (blue arrow) adenopathy suggest tumor glycolytic activity. Diffuse mural thickening of the hypermetabolic ascending colon (green arrow) in the clinical context of suspected lymphoproliferative disease suggests extranodal involvement.
Fuente: Organización Clínica Bonnadona Prevenir, Barranquilla, Atlántico

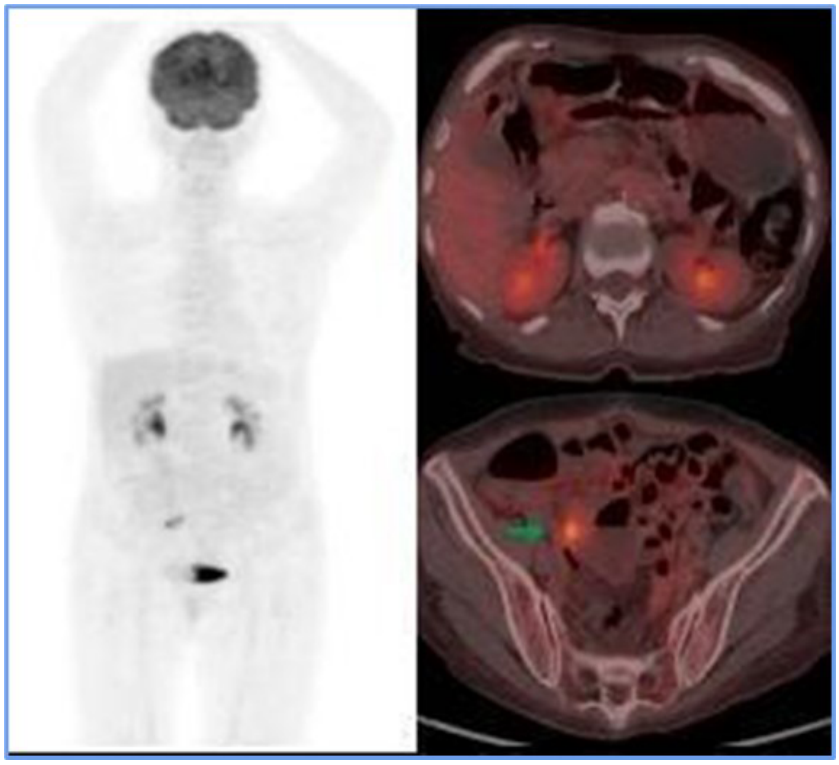

Figure 2. PET CT before ICE regimen. Only the right internal iliac chain adenopathy was evident (green arrow), which showed FDG uptake, exceeding hepatic uptake about score 4 of the Deauville criteria, suggesting a partial metabolic response to the medical treatment instituted.
Fuente: Organización Clínica Bonnadona Prevenir, Barranquilla, Atlántico

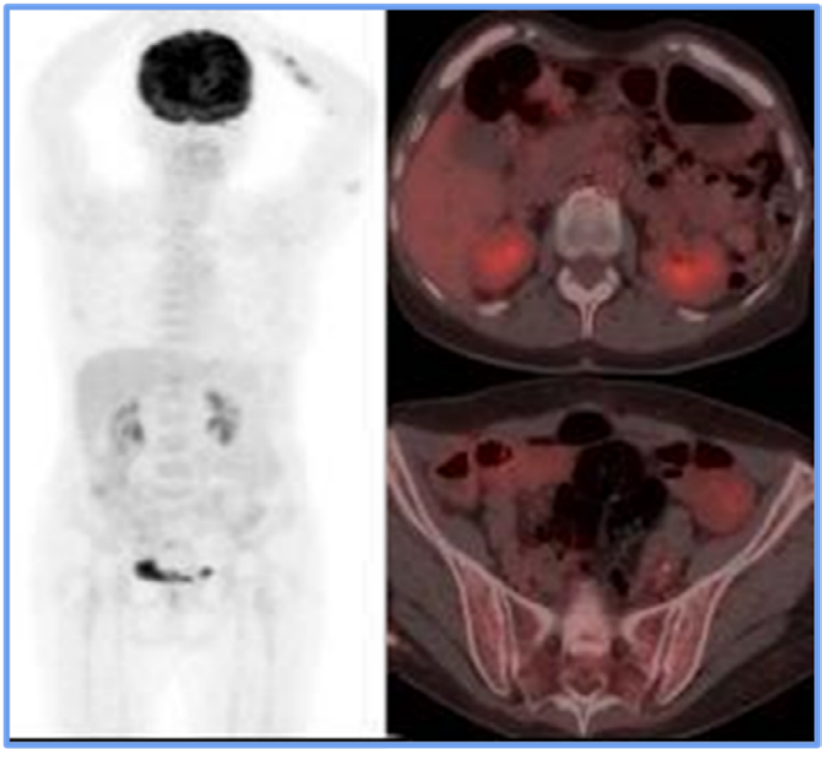

Figure 3. PET CT scan following the rescue scheme. It presents the resolution of adenopathy in the proper internal iliac chain, which is related to morphological and metabolic responses to medical treatment.
Fuente: Organización Clínica Bonnadona Prevenir, Barranquilla, Atlántico

3. Discussion

Dendritic cells are essential in the immune response, acting as a bridge between the innate and adaptive immune systems [1]. These cells are classified into follicular, Langerhans, fibroblastic, and interdigitating types [4]. They are typically found in lymph nodes, the spleen, tonsils, and mucosa-associated lymphoid tissues (MALT) [2]. Dendritic cells originate in the bone marrow or through migration from Langerhans cells [4].

Dendritic cell neoplasms (DCNs) are rare, representing less than 1% of lymphoid-origin tumors [1,6]. DCNs are classified into two main types: stromal dendritic cell neoplasms and myeloid-origin neoplasms, the latter being the focus of this clinical case [5]. Literature reports describe only about 100-127 cases, predominantly in men over 60 years of age, with high metastasis rates (39%) and an average survival of one year in advanced stages [2,3,4,5].

Interdigitating dendritic cell sarcoma (IDCS) typically presents as a painless lymphadenopathy, most commonly in the cervical region, but it has also been described in the axillary, mediastinal, abdominal, and inguinal regions [5]. The most frequent localization site is the lymph nodes, with a prevalence of 47%, and 25% of patients present extranodal involvement. Depending on the affected site, systemic symptoms may be present [2].

The diagnosis of IDCS is complex and requires pathology studies and immunohistochemistry. Due to its low prevalence, there are no established treatment guidelines. Treatment options include surgery, radiotherapy, and chemotherapy, depending on the disease stage [2].

The pathogenesis of IDCS has not been linked to a specific trigger. However, there have been reports of cases in patients who previously received treatments with Tacrolimus, suggesting a T-cell malignancy following its dysregulation, facilitating the development of this type of neoplasm [4]. Histologically, tumor cells are spindle-shaped or histiocytic, with irregular borders, eosinophilic cytoplasm, and enlarged nuclei. They resemble Langerhans cells microscopically but lack Birbeck granules and do not express CD1a or langerin [5].

Immunohistochemical studies typically express markers such as S-100, vimentin, HLA-DR, and CD68. Differential diagnoses include follicular dendritic cell sarcoma, indeterminate dendritic cell tumor, Langerhans cell sarcoma, anaplastic large cell lymphoma, and histiocytic sarcoma. One of the most challenging presentations to differentiate is follicular dendritic cell sarcoma, as both are hematologic neoplasms derived from similar precursors, sharing morphological and clinical features. However, immunohistochemistry can help differentiate these entities. Follicular dendritic cell sarcoma expresses CD21, CD23, and CD35, unlike IDCS. Furthermore, IDCS can mimic non-hematologic neoplasms, such as sarcomas, carcinomas, or melanomas. Metastatic melanoma, for instance, may be confused with IDCS due to expression of S-100 and CD68, but it expresses its own distinct immunohistochemical markers [4].

For staging, PET-CT (F18-FDG) is a crucial tool. Initially, it allowed for documentation of both nodal and extranodal involvement, establishing tumor viability and aiding in follow-up and evaluation of treatment response. The Deauville 5-point visual scale [7] was used to assess treatment response. In this case, the PET-CT documented persistent disease (Deauville 4), which influenced treatment decisions and led to escalation of the medical management. A subsequent PET-CT (F18-FDG) performed after rescue therapy demonstrated a complete metabolic response at the end of treatment [8].

There are no defined treatment guidelines for IDCS due to its low prevalence and unclear etiopathogenesis. For localized disease in early stages, surgery and/or targeted radiotherapy may be considered, although no significant survival differences have been found between surgical and conservative management [5]. In cases with metastatic disease, chemotherapy is usually preferred due to its systemic reach. Chemotherapy regimens used are typically those directed at non-Hodgkin lymphoma, though no regimen has been proven superior to others [4].

IDCS prognosis is directly related to the stage at diagnosis. Survival rates are lower in metastatic stages at the time of treatment initiation [3].

In the case presented here, the patient showed a favorable response to chemotherapy, achieving complete remission and surviving for two years to date. Lymph node and extranodal involvement, along with immunohistochemical findings, enabled the diagnosis and timely treatment initiation (Figure 1). The partial metabolic response observed in the post-treatment PET (Figure 2) led to the decision to

escalate the treatment to second-line RICE chemotherapy. Eventually, a new PET-CT (F18-FDG) post-treatment (Figure 3) confirmed a complete metabolic response.

4. Conclusion

Although IDCS is a very rare pathology due to its similarity to other hematological neoplasms, it should be considered as a differential diagnosis by exclusion, particularly when patients present with lymphadenopathy. It has been reported that 19.7% of cases occur in patients with a previous second malignancy, and in other cases, as a consequence of certain chemotherapy treatments for breast cancer or immunosuppressive therapies. However, due to the limited number of disease reports and the scarce information available, it is not currently possible to determine a clear etiology that explains its origin [4].

It is important to emphasize the critical role of studies such as histopathology and immunohistochemistry, which enable distinguishing among differential diagnoses. This is essential for the timely initiation of treatment, given the poor prognosis of the disease in advanced stages.

5. Abbreviations

TAC: Computed Axial Tomography

PET-CT (F18-FDG): Acronym in English: Positron Emission Tomography - Computed Tomography (Fluorodeoxyglucose 18 - FluoroDeoxyGlucose). In Spanish: Positron Emission Tomography - Computed Tomography (Fluorodeoxyglucose 18-Fluorodeoxyglucose)

ESR: Erythrocyte Sedimentation Volume

CA-125: Carcinoma Antigen 125. (Cancer Antigen 125)

R-CHOP: Rituximab - Cyclophosphamide, Hydroxy-Daunorubicin or Doxorubicin, Oncovin brand name for Vincristine and Prednisone

MALT: Mucosa Associated Lymphoid Tissue

CD: Cluster of Differentiation

HLA: Human Leukocyte Antigen

HMB: Human Melanoma Black

6. Administrative information

6.1 Additional files

None declared by the authors.

6.2. Acknowledgements and Authors' contributions

Rodriguez Orozco and Mojica Silva contributed to analyzing and interpreting the studies presented in this paper. Their knowledge and experience were essential for rigorous data analysis and for obtaining significant conclusions from the manuscript.

The other authors made a substantial contribution to the conception, design of the study, collection, analysis, or interpretation of the data; have participated in the writing of the article or the critical revision of its intellectual content; have approved the final version of the manuscript; and can respond to all aspects of the manuscript in order to ensure that questions related to the veracity or integrity of all its contents have been adequately investigated and resolved.

6.3 Limitation of Liability

The authors assume full responsibility for the opinions and conclusions presented in this article.

6.4. Financing

The authors did not receive any financial recognition for this work.

6.5. Statements

6.5.1. Declaration

Authors assume full responsibility for the opinions and conclusions presented in this article. The journal is not responsible for any errors or omissions, nor for the interpretations or applications derived from the information contained herein.

6.5.2. Consent for publication

The patient gave written informed Consent for this report.

6.5.3. Conflicts of interest

The authors declare that there are no conflicts of interest regarding this case report. All authors have independently participated in the development, analysis, and interpretation of the data, as well as in writing the article.

References

1. Campo E, Swerdlow SH, Harris NL, Jaffe ES, Pileri SA, Stein H, et al. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues (Medicine) Revised Edition. In: Swerdlow SH, Campo E, Harris NL, Jaffe ES, Pileri SA, Stein H, et al., editors. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. 4th ed. IARCPRESS; 2017. p. 469.
2. Santarelli IM, Veltri M, Manzella DJ, Avagnina MA, Pereyra PM, Chavín HC. SARCOMA DISEMINADO DE CÉLULAS DENDRÍTICAS INTERDIGITANTES. CASUÍSTICA MEDICINA. 2017;77:239–41.
3. Martín-Hernández R, Martínez-Subías JJ, del Rey-Tomás Biosca FJ, Tejero-Cavero M. SARCOMA DE CÉLULAS DENDRÍTICAS INTERDIGITANTES [Internet]. 2019. Available at: www.gaesmedica.com/es-es/
4. Lakshmanan A, Kurian A, Annapurneswari S. Interdigitating dendritic cell sarcoma involving head and neck region- a report of four cases with review of literature. Human Pathology: Case Reports. 2021 Jun;24. https://doi.org/10.1016/j.ehpc.2021.200514
5. Pokuri VK, Merzianu M, Gandhi S, Baqai J, Loree TR, Bhat S. Molecular Insights in Patient Care Interdigitating Dendritic Cell Sarcoma NCCN: Continuing Education Accreditation Statement. JNCCN-Journal of the National Comprehensive Cancer Network. 2015 Feb; 13:128–32. https://doi.org/10.6004/jnccn.2015.0020
6. Rosales J, Arrieta E, Ahumada F, Guillermo Restrepo J, Domínguez Durán A, Castaño S, et al. Sarcoma de células dendríticas interdigitantes como segunda neoplasia metacrónica luego de un carcinoma ductal infiltrante de mama: reporte de caso. Revista Colombiana de Hematología y Oncología. 2021;8(Supl1). https://doi.org/10.51643/22562915.416
7. Awan U e kalsoom, Siddiqui N, SaadUllah M, Bashir H, Farooqui ZS, Muzaffar N, et al. FDG-PET scan in assessing lymphomas and the application of Deauville Criteria. J Pak Med Assoc. 2013 Jun;63(6):725–30.
8. Younes A, Hilden P, Coiffier B, Hagenbeek A, Salles G, Wilson W, et al. International Working Group consensus response evaluation criteria in lymphoma (RECIL 2017). Annals of oncology: official journal of the European Society for Medical Oncology. 2017 Jul 1;28(7):1436–47. https://doi.org/10.1093/annonc/mdx097

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Review article / Artículo de revisión

Pharmacological treatment of neoplasms associated with Von Hippel-Lindau disease. A literature review

Tratamiento farmacológico de las neoplasias asociadas con la enfermedad de von Hippel-Lindau. Revisión bibliográfica

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ABSTRACT

Background: Von Hippel-Lindau disease is an autosomal dominant syndrome characterized by the development of benign and malignant tumors throughout life. For many years, neoplasms associated with this disease were treated by surgical resection or ablation with the aim of reducing the risk of metastatic disease and controlling local or systemic sequelae. An effective systemic alternative could reduce the surgical burden and represents a new approach to oncological treatment. **Objective:** To evaluate the efficacy and safety of different drugs used in the treatment of neoplasms associated with Von Hippel-Lindau disease. **Search methods:** An electronic search was carried out without language restriction, until July 31, 2024, in the Cochrane Central Register of Controlled Trials (CENTRAL), PUBMED, and SCIELO databases. **Selection criteria:** Clinical trials with patients with malignancies associated with Von Hippel-Lindau disease, and any targeted drug therapy as intervention were included. **Data collection and analysis:** Data from each clinical study were entered into a data table for qualitative analysis. **Results:** Five articles were selected, four of them are prospective studies and one is a retrospective study that evaluates the efficacy of treatment with Sunitinib, Dovitinib, Pazopanib, and Belzutifan. **Conclusions:** The inhibition of HIF-2α with Belzutifan presents a safer and more effective profile than the antiangiogenic agents Sunitinib and Pazopanib.

Keywords: Von Hippel-Lindau Disease; Drug Therapy; Belzutifan; Carcinoma, renal cell; Hemangioblastoma; VHL protein, Sunitinib.

RESUMEN

Antecedentes: La enfermedad de von Hippel-Lindau es un síndrome autosómico dominante que se caracteriza por el desarrollo de tumores benignos y malignos a lo largo de la vida. Durante muchos años, las neoplasias asociadas a la enfermedad fueron tratadas mediante resección quirúrgica o ablación, con el objetivo de reducir el riesgo de enfermedad metastásica y controlar las secuelas locales o sistémicas. Una alternativa sistémica eficaz podría reducir la carga quirúrgica y representar un nuevo enfoque para el tratamiento oncológico. **Objetivo:** Evaluar la eficacia y la seguridad de los diferentes fármacos utilizados en el tratamiento de las neoplasias asociadas con la enfermedad de von Hippel-Lindau. **Métodos de búsqueda:** Se realizó una búsqueda electrónica sin restricción de idioma hasta el 31 de julio del 2024 en las bases de datos del Registro Cochrane Central de Ensayos Controlados (Central), en PubMed y en SciELO. **Criterios de selección:** Se incluyeron los ensayos clínicos que reclutaron pacientes con neoplasias asociadas con la enfermedad de von Hippel-

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Lindau. En cuanto a la intervención, se incluyó cualquier tratamiento farmacológico dirigido. **Obtención y análisis de datos:** Los datos de cada estudio clínico se ingresaron en una tabla para su análisis cualitativo. **Resultados:** La revisión muestra que las terapias dirigidas (sunitinib, dovitinib, pazopanib y belzutifan) en pacientes con enfermedad de von Hippel-Lindau fueron efectivas, logrando respuestas parciales en carcinoma de células renales (≈50%) y estabilización en otras lesiones. Los estudios de fase II incluyeron entre 6 y 61 pacientes. Los efectos adversos fueron principalmente leves a moderados, incluyendo fatiga, anemia y síndrome mano-pie. El tratamiento prolongado permitió reducir las intervenciones quirúrgicas. **Conclusiones:** La inhibición de la hipoxia alfa con el belzutifan ofrece un mejor perfil de seguridad y eficacia que los agentes antiangiogénicos sunitinib y pazopanib

Palabras Clave: MESCH: enfermedad de von Hippel-Lindau; tratamiento farmacológico; belzutifan; carcinoma, células renales; hemangioblastoma; VHL proteína, sunitinib..

1. Introduction

Von Hippel-Lindau disease (VHL) is an autosomal dominant syndrome caused by mutations in the VHL gene. This a tumor suppressor gene located on chromosome 3p25-26; it was sequenced in 1988 and cloned in 1993, and it encodes the VHL protein (pVHL) [1,2]. About 20% of patients have no family history and present de novo mutations [3]. The incidence is 1/35,000 to 1/45,500 people [4,5]. The clinical manifestations of the disease are hemangioblastomas of the central nervous system (CNS), 60-80% [6]; retinal hemangioblastomas, 49-62% [7]; endolymphatic sac tumors, 6-15% [8,9]; renal cell carcinoma or renal cysts, 30-70% [7]; Pheochromocytomas (PCC), 10-20% [7]; pancreatic neuroendocrine tumors (pNET) or pancreatic cysts, 35-70% [8]; and epididymal cystadenomas, 25-60% [7].

In 1894, Treacher Collins, a British ophthalmologist, was the first to observe several lesions in the form of a plexus of blood vessels in the retina of two brothers. He concluded that it was a new, hereditary disease and called it capillary nevus [10]. Later in 1904, Von Hippel reported retinal events in two patients, with progression to multiple lesions in one of them, and named the disease angiomatosis retinae [11,12]. In 1926, the pathologist Arvid Lindau described in his monograph the retinal, cerebral, and visceral components of this disease; to do so, he compiled information from 40 cases, which Cushing called Lindau disease [10,13].

The diagnosis is made when the patient is a carrier of the genetic variant and has one or more clinical manifestations of the disease, at least one clinical manifestation, a first-degree relative who is a carrier of the mutation; genetic confirmation is suggested in patients without a family history, who have a minimum of two types of tumors associated with the disease, one of them being a hemangioblastoma (HB) [14] .

Although most tumors appear in adulthood, some can develop earlier, e.g., retinal angioma, pheochromocytoma, and renal cell carcinoma. Therefore, annual clinical/neurological and retinal surveillance is recommended from birth and for life and imaging studies of the abdomen and CNS every 2 years, from age 15, with an initial magnetic resonance imaging (MRI) of the CNS at 10 years of age [14,15]. It is estimated that VHL disease is present in one third of patients with CNS hemangioblastoma, in more than 50% of retinal angiomas, in 1% of renal cell cancer (RCC), in 50% of familial pheochromocytoma, and in 11% of apparently sporadic pheochromocytoma [3,16,17].

Renal cell carcinoma occurs in up to 70% of patients with VHL disease. In these cases, nephron-sparing surgery is recommended when the tumor diameter is ≥3.0 cm due to the risk of metastasis, and when accelerated tumor growth is evident [18,19]. It results in a recurrence-free survival rate of 76% at 5 years and 20% at 8 years [20]. In a retrospective study, 181 patients with renal tumors associated with VHL disease were divided into two groups: Group 1 (108 patients) presented tumors smaller than 3 cm, the mean follow-up was 58 months, and surgery was recommended when the tumor reached 3 cm, in this group, no metastatic disease was developed; Group 2 (73 patients) presented a tumor diameter greater than 3 cm, the mean follow-up was 72.9 months and metastasis occurred in 27.4% of patients. It was concluded that the larger the tumor size, the greater the risk of metastasis [18].

Regarding tumor growth rate, 41 patients with clear cell renal cell carcinoma (ccRCC) were evaluated retrospectively. Tumor growth kinetics ranged from 0.24-2.74 cm/year, with a mean of 0.287 cm/year, patients showed great variation in growth rates: 27.5% had slow-growing tumors, 44.1% moderate-growing tumors, and 28.4% fast-growing tumors [21] .

For many years, neoplasms associated with VHL disease were treated by surgical resection or ablation with the aim of reducing the risk of metastatic disease and controlling local or systemic sequelae [20,22–27]. An effective systemic alternative could reduce the surgical burden and represents a new approach to oncologic treatment.

2. Genetics and molecular biology of VHL disease

The VHL protein plays a key role in cellular oxygen sensing. Under normoxic conditions, it targets hypoxia-inducible factor alpha (HIF-α) for proteasomal degradation. In hypoxia, HIF-α accumulates, and leads to overproduction of vascular endothelial growth factor (VEGF), transforming growth factor beta (TGFβ), platelet-derived growth factor (PDGF), glucose transporter 1 (GLUT-1) and erythropoietin (EPO), and promoting angiogenesis, differentiation, migration and cell proliferation. The HIF-α pathway presents two isoforms: HIF-1α and HIF-2α that play distinct roles in response to hypoxia [28,29].

In VHL disease, one allele of the VHL gene is mutated in the germline and the second allele may be lost somatically (usually through loss of chromosome 3p). Subsequent loss of pVHL causes HIF-α to accumulate in the absence of hypoxia (referred to as "pseudohypoxia"), thus resulting in activation of downstream HIF targets and tumorigenesis of affected tissues [30].

Previous investigation showed that binding small molecules to an internal pocket in HIF-2α could allosterically inhibit the protein-protein interaction between HIF-2α and transcriptional ribonucleic acid (TRNA), which would lead to the inhibition of transcriptional activity by stopping the processes of tumorigenesis [31-33].

3. Materials and methods

3.1 Main goal

This study aims at establishing the level of efficacy of the different study drugs in neoplasms associated with Von Hippel-Lindau disease.

3.2 Secundary goal

Determine the type of drug toxicity that led to discontinuation of treatment, and describe which tumors were most sensitive to the study drugs.

3.3 Study Design

We conducted a descriptive, observational systematic review with a qualitative approach.

3.4 Databases and Terminology Search

We conducted an electronic search for systemic treatment in neoplasms associated with von Hippel-Lindau disease until July 31, 2024. The search was made in Cochrane Central Register of Controlled Trials (CENTRAL), PUBMED, and SCIELO databases using MeSH terms and free text, in addition to the Boolean operators AND, OR and NOT. In PUBMED the search equation was **(((clinical trial) OR (pilot study)) OR (drug therapy)) AND ("von Hippel-Lindau" [Title])**, 148 medical articles were found, out of which 5 met the selection criteria to be part of the study. In COCHRANE, the search equation was **"von Hippel Lindau Disease":ti,ab,kw AND Therapy**, 14 articles were found and 4 were selected. In addition, a search was performed in the SCIELO database using the equation **((ab:("von hippel Lindau"))) AND (therapy)**, 3 articles were found, but none met the selection criteria. A search was attempted in SCOPUS, but medical articles were not open access.

3.5 Inclusion Criteria

- Clinical studies in which the patient sample presented a diagnosis of Von Hippel-Lindau disease with genetic confirmation, or with clinical characteristics of the disease but with a family history.
- Human clinical trials.
- Study participants over 18 years of age.
- Studies published by July 31, 2024.
- Open access articles.

3.6 Exclusion Criteria

- Research reviews, single case studies, books or manuals.
- Studies in pediatric patients.
- Animal studies.
- Studies with symptomatic brain metastases.
- Clinical trials with solid tumors not associated with VHL disease.
- Research whose patients received surgical treatments, radiotherapy, radiosurgery or radiofrequency ablation.
- Studies aimed solely at the treatment of hemangioblastomas, or retinal hemangiomas associated with VHL disease.

3.7 Selection of articles

We selected clinical studies evaluating the effectiveness and toxicity of a drug in a sample of patients with tumors associated with Von Hippel Lindau disease. The information was selected by title and abstract in electronic databases. Then, full-text articles were downloaded, read, and those that included clinical trials with systemic treatment for neoplasias associated with VHL disease were selected. Data were extracted in a table and the methodological quality was analyzed. The heterogeneity of these studies was assessed. There were no restrictions on language or publication status (Figura 1).

4. Results and Discussion

Table 1 shows the characteristics of the four prospective studies and the retrospective article, with a small sample in each study.

Currently, the majority of patients with neoplasias associated with VHL disease undergo repetitive surgical procedures, leading to neurological sequelae, renal or pancreatic failure, and a decline in their quality of life. As a result, targeted therapy studies have been done on VGFR, FGFR, and HIF-2α, and the results have been positive in terms of how well it works and how safe it is.

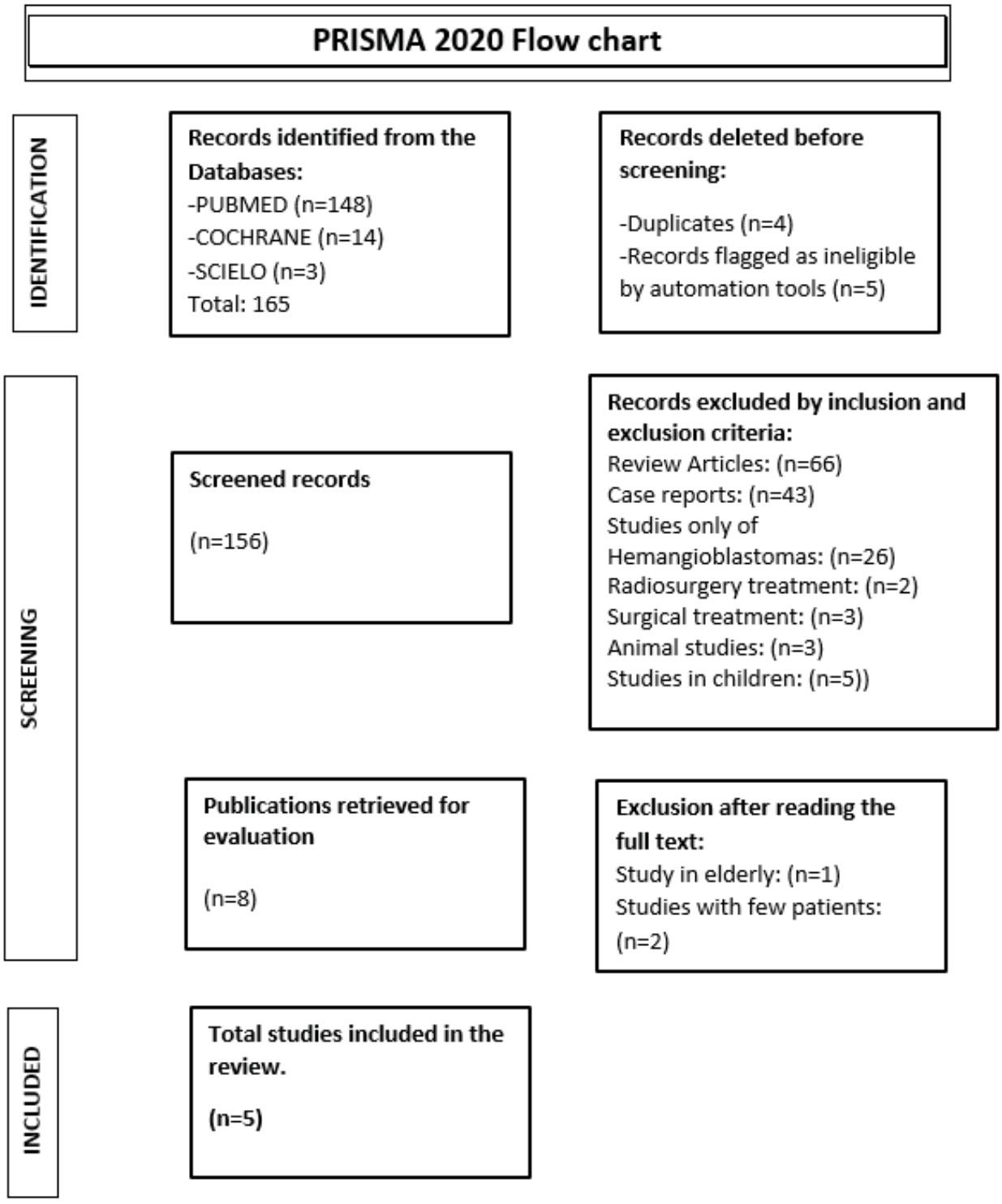

Figure 1. PRISMA 2020 Flowchart
Source: Own elaboration based on PRISMA 2020 flow chart

Table 1. Characteristics of the studies

Author	Study design	Number of patients. Manifestations of VHL disease	Assessment criteria	Median age in years	Methodology (Intervention – dose)	Median follow-up	Responses according to RECIST	Median time to RECIST response	Adverse events	Observations
Jonasch E et al., 2011 [34]	Prospective, open-label, single-arm phase II study	N = 15 6 discontinued treatment 12: CCR. 11: Renal cysts. 11: CNS HB. 9: Retinal hemangiomas. 7: Pancreatic cysts. 7: Neuroendocrine tumors of the pancreas. 3: Adrenal lesions. 2:Endolymphatic sac tumor. 1: Cystadenoma of epididymis.	Main objective: security. Secondary objective: Efficacy of complete responses (CR) + partial responses (PR).	36 (22–57)	Sunitinib 50 mg/ day for 28 days, followed by 14 days of rest , for 4 cycles, with the possibility of dose reduction to 37.5 or 25 mg due to toxicity.	48 weeks	33% of RCC responded partially to none of the HBs (P = 0.014) . HB: 91% stable disease. The rest of the injuries were stable.		Fatigue, hand-foot syndrome, nausea, grade 3 neutropenia.	At 48 weeks, RCC and neuroendocrine tumors had grown again, reaching measurements close to the initial ones, but not larger.
Roma A et al., 2015 [35]	Retrospective Study	N = 14 No. of injuries in the study 11: Hemangioblastomas of the cerebellum. 11: Pancreatic cysts. 9: Renal cysts. 8: Spinal hemangioblastomas 7: Retinal angiomas. 3: Neuroendocrine tumors of the pancreas. 3: Epididymal cysts. 2: Pheochromocytoma. 1: Supratentorial hemangioblastoma. 1: Adrenal adenoma	Primary objective: progression-free survival (PFS). Secondary objectives: radiological response, toxicity and overall survival (OS)	48 (27-71)	Sunitinib 50 mg/ day for 28 days, followed by 14 days of rest , with the possibility of dose reduction to 37.5 or 25 mg due to toxicity.	39.4 months	RP: 64.3% of patients. Stable disease: 35.7% SLP: 85.7% the first year. 71.4% in the second year. With the exception of HB, there was a response in all lesions.		Mucositis, hand-foot syndrome, asthenia, hypertension, hypothyroidism.	Patients received a median of 19.5 cycles, treatment was continued until maximum response, progression, unacceptable toxicity, or patient refusal.

Continuation. Table 1. Characteristics of the studies

Pilié P et al., 2018 [36]	Prospective, single-center, open-label, single-arm, phase 2 study.	N = 6 3 discontinued treatment 5: HB in cerebellum. 4: HB of the brain stem. 3: Retinal HB 2: RCC 2: Pancreatic cysts.	Main objective: security. Secondary objectives: Effectiveness	44 (18-61)	Dovitinib 500 mg/day in a 4-week cycle with a 5-day on, 2-day off schedule, for 6 cycles.		No RECIST response was evident. The HBs showed stability.		Rash, diarrhea, fatigue.	The study was discontinued due to toxicity.
Jonasch E et al., 2018 [37]	Prospective, single-arm, phase 2 study.	N = 31 7 discontinued treatment 23: CNS lesions. 22: Kidney injuries. 9: Lesions in the pancreas. 3: Eye injuries. 1:Lesions in Adrenal.	Objective response rate (ORR) and safety.	38 (32-42).	Pazopanib 800 mg/day, with dose reduction in 200 mg increments permitted if patients experienced grade 3 or higher toxicity for 24 weeks.	12 months	RP: 42 %. Stable disease: 58%. **TRO by organ:** RCC: 52%. Pancreatic lesions: 53%. CNS HB: 4%.	RCC: 3 months. HB: 6 months. Pancreatic lesions: 6 months	Fatigue, diarrhea or transaminitis.	Most patients decided to continue treatment after 24 weeks.

Continuation. Table 1. Characteristics of the studies

Jonasch E et al., 2021 [38]	Prospective, open-label, single-arm phase 2 study.	N = 61 7 discontinued treatment. All patients had RCC and pancreatic lesions. 22:Neuroendocrine tumors of the pancreas. 50: CNS HB. 12: Retinal HB: 12.	Main objective: objective response. Secondary objectives: duration of response, time to response and progression-free survival in RCC, other criteria were efficacy in non-renal carcinomas associated with VHL disease and safety of Belzutifan.	41 (19-66),	Belzutifan 120 mg/day.	21.8 months	**TRO by organ:** RCC: 49%. Neuroendocrine tumors of the pancreas: 91%. CNS HB: 30% The median duration of response was not reached.	RCC: 8.2 months. Pancreatic neuroendocrine tumors: 5.5 months. CNS HB: 3.2 months.	Anemia grade 1 and 2 (90%), Fatigue grade 1 and 2 (66%).	54 Patients (89%) were still receiving treatment with Belzutifan at the data cut-off date. Prior to the initiation of Belzutifan, patients had undergone 327 procedures (surgery, radiofrequency ablation), out of which 64 occurred in the 2.5 years prior to the start of the study, and only three surgeries were required during the 22 months of Belzutifan.

VHL: Von Hippel-Lindau; RCC: renal cell carcinoma; HB: Hemangioblastoma; CNS: Central nervous system; PFS: progression-free survival; PR: partial response; ORR: Objective response rate

The study conducted by Jonasch et al. in 2011 [34] revealed that the growth of RCC and pancreatic NETs recurred after 48 weeks, a maximum of four treatment cycles, despite prolonged administration of sunitinib, as reported by Rome. According to the response evaluation criteria for solid tumors (RECIST), most patients in a 2015 study maintained their responses, suggesting the need for additional research to determine the best doses for prolonged treatments, given the potential for adverse events that could result in treatment abandonment [34, 35].

The analysis of samples from the Tissue Bank of MD Anderson at the University of Texas revealed a null response of the HB to sunitinib, a VEGF receptor inhibitor, with low expression of the VEGF receptor 2 in the HB compared to the RCC ($p = 0.003$), and higher levels of the fibroblast growth factor receptor substrate 2 (FGF) in the HB ($p = 0.003$). This raises the hypothesis that treatment with FGF receptor blockers may benefit patients with HB [34].

It is unclear why VHL-derived malignancies respond differently to therapy. It looks like sunitinib is a better way to treat VHL-related RCC than other VHL-related lesions. However, its side effects have made it hard to use for long periods of time [34, 35].

By changing the molecular mechanism that affects clinical manifestations, the ultimate goal of systemic therapy is to lower the number of surgeries needed in people with VHL disease [30,32,33].

The review's analysis reveals that HIF-2 inhibition provides a superior safety and efficacy profile compared to the antiangiogenic agents sunitinib and pazopanib. On August 13, 2021, the Food and Drug Administration (FDA) approved belzutifan for patients with VHL who have developed clear-cell renal cell carcinoma, central nervous system HB, or pancreatic neuroendocrine tumors associated with the disease [39].

The belzutifan clinical trial results suggest that it could be used instead of or in addition to surgery to treat people with VHL disease. This is because it delays or eliminates the need for surgeries that are linked to serious problems like neurological sequelae or renal or pancreatic failure. It also lowers surgical morbidity and breaks the cycle of having to have surgeries over and over again [38, 40].

Reporting response in individual lesions is not a common way to share the results of a clinical study. However, for people with VHL disease, each clinical manifestation is a separate medical and surgical challenge, and a drug effect on any lesion may mean that surgery is not necessary. Limitations of the review for extrapolating the results to the general population include the limited number of studies, the heterogeneity of the samples, and the low number of patients per study. However, we should acknowledge that there remains a vast field to delve into. The studies that were looked at suggest that histopathological samples from people with VHL disease should be studied to find out the molecular differences in the affected tissues and then target therapies should be looked into.

Limitations of the review to extrapolate the results to the general population include the low number of studies, heterogeneity of the samples, and low number of patients per study. However, there is still a wide field to explore; the analyzed studies suggest the investigation of histopathological samples associated with VHL disease to determine the molecular differences of the affected tissues and subsequently investigate target therapies.

5. Conclusions

Mutations in patients with Von Hippel-Lindau disease (VHL) demand continuous surveillance and a multidisciplinary therapeutic approach. Repeated surgical interventions cause serious physical and psychological sequelae; thus, systemic management seeks to prevent invasive procedures and improve quality of life, especially in cases of associated neoplasia.

HIF-2α inhibition has shown a better safety and efficacy profile compared to traditional antiangiogenic agents, thus minimizing serious adverse events. Since its FDA approval in 2021, Belzutifan has revolutionized the treatment of renal carcinoma and other VHL-associated neoplasms by stopping or reversing tumor growth, reducing the need for surgery and the risk of metastasis.

6. Administrative information

6.1 Source of research support

The study was financed with each investigator's own resources.

6.2 Declaration of conflict of interest

The authors declare that they have no conflicts of interest.

6.3.2 Author contributions

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7. ABBREVIATIONS

VHL: Von Hippel-Lindau.

pVHL: Von Hippel-Lindau protein.

TKI: Tyrosine kinase inhibitor.

HB: Hemangioblastoma.

CNS: Central nervous system.

MRI: Magnetic resonance imaging.

RCC: Renal cell cancer.

ccRCC: Clear cell renal cell carcinoma.

FDA: Food and Drug Administration.

PCC: Pheochromocytoma.

pNET: Pancreatic neuroendocrine tumor.

HIF-α: Hypoxia-inducible factor alpha.

VEGF: Vascular endothelial growth factor.

TGFβ: Transforming growth factor beta.

PDGF: Platelet-derived growth factor.

FGF: Fibroblast-derived growth factor.

Referencias

1. Latif F, Tory K, Gnarra J, Yao M, Duh FM, Orcutt ML, et al. Identification of the von Hippel-Lindau disease tumor suppressor gene. Science. 1993;260(5112):1317-20.
2. Seizinger BR, Rouleau GA, Ozelius LJ, Lane AH, Farmer GE, Lamiell JM, et al. Von Hippel-Lindau disease maps to the region of chromosome 3 associated with renal cell carcinoma. Nature. 1988;332(6161):268-9.
3. Richards FM, Payne SJ, Zbar B, Affara NA, Ferguson-Smith MA, Maher ER. Molecular analysis of de novo germline mutations in the von Hippel-Lindau disease gene. Hum Mol Genet. 1995;4(11):2139-43.
4. Maddock IR, Moran A, Maher ER, Teare MD, Norman A, Payne SJ, et al. A genetic register for von Hippel-Lindau disease. J Med Genet. 1996;33(2):120-7.
5. Maher ER, Iselius L, Yates JR, Littler M, Benjamin C, Harris R, et al. Von Hippel-Lindau disease: A genetic study. J Med Genet. 1991;28(7):443-7.
6. Maher ER. Von Hippel-Lindau disease. Eur J Cancer. 1994;30(13):1987-90.
7. Maher ER, Neumann HP, Richard S. von Hippel–Lindau disease: A clinical and scientific review. Eur J Hum Genet. 2011;19(6):617-23.
8. Wind JJ, Lonser RR. Management of von Hippel-Lindau disease-associated CNS lesions. Expert Rev. Neurother. 2011;11(10):1433-41.
9. Singh AD, Shields CL, Shields JA. von Hippel–Lindau Disease. Surv. Ophthalmol. 2001;46(2):117-42.
10. Melmon KL, Rosen SW. Lindau's disease: Review of the literature and study of a large kindred. Am. J. Med.. 1964;36(4):595-617.
11. von Hippel E. Über eine sehr seltene Erkrankung der Netzhaut: Klinische Beobachtungen. Graefes Arhiv für Ophthalmologie. 1904;59(1):83-106.
12. von Hippel E. Die anatomische Grundlage der von mir beschriebenen „sehr seltenen Erkrankung der Netzhaut". Graefes Arch. 1911;79(2):350-77.
13. Fulton JF. Harvey Cushing: A biography [Internet]. [Consultado 17 jul 2024]. Disponible en: http://biblioteca.ufm.edu/opac/record/43974?&mode=advanced&query=@field1=encabezamiento@value1=MEDICOS%20-%20BIOGRAFIAS&recnum=15
14. Louise M Binderup M, Smerdel M, Borgwadt L, Beck Nielsen SS, Madsen MG, Møller HU, et al. von Hippel-Lindau disease: Updated guideline for diagnosis and surveillance. Eur. J. Med. Genet. 2022;65(8):104538.
15. Poulsen M, Budtz-Jørgensen E, Bisgaard M. Surveillance in von Hippel-Lindau disease (vHL). Clinical Genetics. 2010;77(1):49-59.
16. Neumann HPH, Bausch B, McWhinney SR, Bender BU, Gimm O, Franke G, et al. Germ-line mutations in nonsyndromic pheochromocytoma. N Engl J Med. 2002;346(19):1459-66.
17. Neumann HP, Bender BU, Berger DP, Laubenberger J, Schultze-Seemann W, Wetterauer U, et al. Prevalence, morphology and biology of renal cell carcinoma in von Hippel-Lindau disease compared to sporadic renal cell carcinoma. J Urol. 1998;160(4):1248-54.
18. Duffey Bg, Choyke Pl, Glenn G, Grubb Rl, Venzon D, Linehan Wm, et al. The relationship between renal tumor size and metastases in patients with von Hippel-Lindau disease. J. Urol. 2024;172(1):63-5. https://doi.org/10.1097/01.ju.0000132127.79974.3f
19. Jilg CA, Neumann HPH, Gläsker S, Schäfer O, Leiber C, Ardelt PU, et al. Nephron sparing surgery in von Hippel-Lindau associated renal cell carcinoma; clinicopathological long-term follow-up. Fam Cancer. 2012;11(3):387-94.
20. Roupret M, Hopirtean V, Mejean A, Thiounn N, Dufour B, Chretien Y. Nephron sparing surgery for renal cell carcinoma and von Hippel-Lindau's disease: A single center experience. J. Urol. 2003;170(5):1752-1755. https://doi.org/10.1097/01.ju.0000092780.85876.de

21. Schuhmacher P, Kim E, Hahn F, Sekula P, Jilg CA, Leiber C, et al. Growth characteristics and therapeutic decision markers in von Hippel-Lindau disease patients with renal cell carcinoma. Orphanet J Rare Dis. 2019;14:235.

22. Olweny EO, Park SK, Tan YK, Best SL, Trimmer C, Cadeddu JA. Radiofrequency ablation versus partial nephrectomy in patients with solitary clinical T1a renal cell carcinoma: Comparable oncologic outcomes at a minimum of 5 years of follow-up. Eur Urol. 2012;61(6):1156-61.

23. Zagoria RJ, Pettus JA, Rogers M, Werle DM, Childs D, Leyendecker JR. Long-term Outcomes After Percutaneous Radiofrequency Ablation for Renal Cell Carcinoma. Urology. 2011;77(6):1393-7.

24. Yu J, Zhang G, Liang P, Yu X ling, Cheng Z gang, Han Z yu, et al. Midterm results of percutaneous microwave ablation under ultrasound guidance versus retroperitoneal laparoscopic radial nephrectomy for small renal cell carcinoma. Abdom Imaging. 2015;40(8):3248-56.

25. Gao Y, Liang P, Yu X, Yu J, Cheng Z, Han Z, et al. Microwave treatment of renal cell carcinoma adjacent to renal sinus. Eur. J. Radiol. 2016;85(11):2083-9.

26. Tanagho YS, Bhayani SB, Kim EH, Figenshau RS. Renal Cryoablation Versus Robot-Assisted Partial Nephrectomy: Washington University Long-Term Experience. J. Endourol. 2013;27(12):1477-86.

27. Breen DJ, Bryant TJ, Abbas A, Shepherd B, McGill N, Anderson JA, et al. Percutaneous cryoablation of renal tumours: Outcomes from 171 tumours in 147 patients. BJU International. 2013;112(6):758-65.

28. Haase VH. The VHL tumor suppressor: master regulator of HIF. Curr Pharm Des. 2009;15(33):3895-903.

29. Gossage L, Eisen T, Maher ER. VHL, the story of a tumour suppressor gene. Nat Rev Cancer. 2015;15(1):55-64.

30. Kim WY, Safran M, Buckley MRM, Ebert BL, Glickman J, Bosenberg M, et al. Failure to prolyl hydroxylate hypoxia-inducible factor alpha phenocopies VHL inactivation in vivo. EMBO J. 2006;25(19):4650-62.

31. Scheuermann TH, Tomchick DR, Machius M, Guo Y, Bruick RK, Gardner KH. Artificial ligand binding within the HIF2alpha PAS-B domain of the HIF2 transcription factor. Proc Natl Acad Sci U S A. 2009;106(2):450-5.

32. Scheuermann TH, Li Q, Ma HW, Key J, Zhang L, Chen R, et al. Allosteric Inhibition of Hypoxia Inducible Factor-2 with Small Molecules. Nat Chem Biol. 2013;9(4):271-6.

33. Rogers JL, Bayeh L, Scheuermann TH, Longgood J, Key J, Naidoo J, et al. Development of inhibitors of the PAS-B domain of the HIF-2α transcription factor. J Med Chem. 2013;56(4):1739-47.

34. Jonasch E, McCutcheon IE, Waguespack SG, Wen S, Davis DW, Smith LA, et al. Pilot trial of sunitinib therapy in patients with von Hippel-Lindau disease. Ann Oncol. 2011;22(12):2661-6.

35. Roma A, Maruzzo M, Basso U, Brunello A, Zamarchi R, Bezzon E, et al. First-Line sunitinib in patients with renal cell carcinoma (RCC) in von Hippel-Lindau (VHL) disease: Clinical outcome and patterns of radiological response. Fam Cancer. 2015;14(2):309-16.

36. Pilié P, Hasanov E, Matin SF, Woodson AHH, Marcott VD, Bird S, et al. Pilot study of dovitinib in patients with von Hippel-Lindau disease. Oncotarget. 2018;9(34):23390-5.

37. Jonasch E, McCutcheon IE, Gombos DS, Ahrar K, Perrier ND, Liu D, et al. Pazopanib in patients with von Hippel-Lindau disease: A single-arm, single-centre, phase 2 trial. Lancet Oncol. 2018;19(10):1351-9.

38. Jonasch E, Donskov F, Iliopoulos O, Rathmell WK, Narayan VK, Maughan BL, et al. Belzutifan for renal cell carcinoma in von Hippel-Lindau disease. NEJM. 2021;385(22):2036-46.

39. Fallah J, Brave MH, Weinstock C, Mehta GU, Bradford D, Gittleman H, et al. FDA approval summary: Belzutifan for von Hippel-Lindau disease-associated tumors. Clin Cancer Res. 2022;28(22):4843-8.

40. Shepherd STC, Drake WM, Turajlic S. The road to systemic therapy in von Hippel-Lindau (VHL) disease: Are we there yet? Eur J Cancer. 2023;182:15-22.

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Prevalence of neutropenia in a level IV institution in the city of Barranquilla, Colombia

Prevalencia de la neutropenia en una institución de cuarto nivel en la ciudad de Barranquilla, Colombia

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ABSTRACT

Introduction: Neutropenia, a decrease in the absolute count of circulating neutrophils, compromises the immune response and increases susceptibility to infections, from mild skin conditions to fatal systemic complications. This study analyzes the clinical, sociodemographic characteristics and prevalence of neutropenia in patients of the Bonnadona Prevenir Clinical Organization between 2021 and 2022. **Methods:** We conducted a cross-sectional study using data from the Bonnadona Prevent Clinical Organization laboratory. Patients with an absolute neutrophil count < 1,000 cells/µL in the period 2021-2022 were included. **Results:** 213 subjects were included (average age 50 ± 19 years), 33.3% men and 66.7% women. 70.4% presented moderate and 29.6% severe neutropenia. Age, gender, origin, and affiliation regime did not show significant associations with the type of neutropenia ($p > 0.05$). The most frequent diagnosis was breast cancer (33.3%). The most common treatments were cyclophosphamide + doxorubicin, followed by carboplatin + paclitaxel. High blood pressure (HTN) and HTN + diabetes mellitus (DM) were the most frequent comorbidities. **Conclusion:** Neutropenia is a relevant complication in patients with cytotoxic and immunosuppressive therapies, especially in hematological diseases. We observed a high incidence of moderate and severe neutropenia, with a higher incidence in women, potentially due to the prevalence of breast cancer. These findings highlight the importance of active surveillance and the need for personalized management strategies to mitigate the risk of serious infections and improve patients' quality of life

Keywords: neutropenia, cytotoxic, immunosuppression, chemotherapy, breast cancer.

RESUMEN

Introducción: La neutropenia, una disminución del recuento absoluto de neutrófilos circulantes, compromete la respuesta inmunitaria y aumenta la susceptibilidad a infecciones, desde afecciones cutáneas leves hasta complicaciones sistémicas fatales. Este estudio analiza las características clínicas y sociodemográficas, y la prevalencia de neutropenia en pacientes de la Organización Clínica Bonnadona Prevenir entre 2021 y 2022. **Métodos:** Estudio transversal basado en datos del

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laboratorio de la Organización Clínica Bonnadona Prevenir. Se incluyeron pacientes con recuento absoluto de neutrófilos < 1,000 células/µL en el periodo 2021-2022. **Resultados:** Se incluyeron 213 sujetos (edad promedio de 50 ± 19 años), 33.3% hombres y un 66.7% de mujeres. El 70.4% presentó neutropenia moderada y el 29.6% neutropenia severa. La edad, el género, la procedencia y el régimen de afiliación no mostraron asociaciones significativas con el tipo de neutropenia (p > 0.05). El diagnóstico más frecuente fue cáncer de mama (33.3%). Los tratamientos más comunes fueron ciclofosfamida + doxorrubicina seguido de carboplatino + paclitaxel. La hipertensión (HTA) y la hipertensión + diabetes mellitus (DM) fueron las comorbilidades más frecuentes. **Conclusión:** La neutropenia es una complicación relevante en pacientes con terapias citotóxicas e inmunosupresoras, especialmente en enfermedades hematológicas. Se observó una alta incidencia de neutropenia moderada y severa, mayor en mujeres, posiblemente por la prevalencia del cáncer de mama. Estos hallazgos resaltan la importancia de la vigilancia activa y la necesidad de estrategias de manejo personalizadas para mitigar el riesgo de infecciones graves y mejorar la calidad de vida de los pacientes.

Palabras Clave: neutropenia, citotóxicos, inmunosupresión, quimioterapia, cáncer de mama.

1. Introduction

Neutrophils comprise approximately 70% of the leukocytes in the blood and are crucial in defending the body against bacterial infections [1]. They act as the first line of defense through the phagocytosis of pathogens and the release of antimicrobial factors contained in specialized granules [2,3].

Neutropenia is defined as a reduction in the absolute neutrophil count (ANC) in the bloodstream. Typical ANC values vary by age, but neutropenia is generally defined as ANC < 1,500 cells/µL. Clinically, it can be classified as mild (1,000 - 1,500 cells/µL), moderate (500 - 1,000 cells/µL), or severe (< 500 cells/µL). Severe neutropenia, with its consequent reduction in the ability to mount a systemic inflammatory response, increases the risk of infections, especially those of endogenous origin such as skin and gastrointestinal tract [4].

The severity of neutropenia increases the risk of infections, primarily those caused by endogenous flora from the skin and gastrointestinal tract. Profound neutropenia (ANC < 100 cells/µL for more than 7 days post-cytotoxic therapy) has been associated with more significant complications and the need for treatment adjustments, such as dose reductions or delays in chemotherapy, which significantly affect clinical outcomes [5,6].

There are several mechanisms that can cause neutropenia, for instance, decreased marrow production, sequestration, and increased destruction of neutrophils in the blood, whether congenital or acquired [4,7,8].

The lack of local epidemiological data on neutropenia has limited clinical decision-making in our setting, given that it is a prevailing problem associated with morbidity and even mortality [3]. Therefore, the Research Group of the Bonnadona Prevenir Clinical Organization (OCBP) aimed at conducting a study to characterize these patients, including associated diseases, used cytostatic regimens, and comorbidities. The goal was to generate evidence that enables timely and appropriate therapeutic adjustments by anticipating the onset of neutropenia and optimizing clinical management of these patients.

2. Design

A retrospective descriptive cross-sectional study was conducted using data obtained from the clinical laboratory database of the OCBP. The study included patients who had laboratory tests performed at the institution and presented an absolute neutrophil count (ANC) < 1,000 cells/µL during the 2021-2022 period, with a hematologic oncology diagnosis after receiving chemotherapy treatment.

2.1 Population and Sample

Inclusion criteria applied to patients of all ages and both sexes with an ANC < 1,000 cells/µL admitted to OCBP during 2021-2022, with hematologic diagnoses (breast cancer, cervix, colon, lymphoma,

acute lymphoid leukemia, and multiple myeloma), regardless of associated comorbidities. Exclusion criteria considered patients with recurrent neutropenia and those lacking demographic or clinical information in their medical records. Cases were classified according to the severity of neutropenia: moderate and severe.

2.2 Data Collection

Patients diagnosed with neutropenia were identified throughout the institutional laboratory database. During the patient selection process, the clinical record of each individual was reviewed to identify sociodemographic variables, clinical conditions, comorbidities, neutrophil counts, and chemotherapy received.

3. Ethical Considerations

The research protocol was approved by the OCBP Research Ethics Committee. This study is considered low-risk, as the source was the institutional clinical laboratory reporting database.

4. Results

Table 1 presents the sociodemographic characteristics of patients in general and by neutropenia classification. The average age of the patients was 50 years, with a standard deviation of ± 19 years. The age variable was categorized into three groups: minors (19 patients, 8.9% of the total), adults between 18 and 64 years (147 patients, 69% of the total), and older adults over 64 years (47 patients, 22.1% of the total). Male patients represented 33.3% of the sample (71 out of 213), while female patients accounted for 66.7% (142 out of 213). Forty percent of the patients came from rural areas, while most were from urban areas. Furthermore, 54.9% reported being affiliated with a contributory health insurance regime.

Table 1. Descriptive analysis of patient diagnoses by sociodemographic factors.

		Neutropenia		
Characteristics	Total (%)	Moderate n (%)	Severe n (%)	P-value*
	213 (100)	**150 (70.4)**	**63 (29.6)**	
Age	49.9±19.4	50.4±19.9	48.6±20.3	
<18	19 (8.9)	13 (8.7)	6 (9.5)	0.891
18-64	147 (69.0)	105 (70.0)	42 (66.7)	
>64	47 (22.1)	32 (21.3)	15 (23.8)	
Gender				
Male	71 (33.3)	46 (30.7)	25 (39.7)	0.203
Female	142 (66.7)	140 (69.3)	38 (60.3)	
Origin				
Rural	85 (39.9)	57 (38.0)	28 (44.4)	0.381
Urban	128 (60.1)	93 (62.0)	35 (55.6)	
Regimen				
Subsidized	96 (45.1)	70 (46.7)	26 (41.3)	0.470
Contributory	117 (54.9)	80 (53.3)	37 (58.7)	

*Chi-square test for p-value calculation; n: part of the sample analyzed; (%): representative percentage of the analyzed sample (n).

Regarding the type of neutropenia, Table 1 shows that 150 patients (70.4%) had moderate neutropenia, and 63 (29.6%) had severe neutropenia. When analyzing sociodemographic factors, it was observed that among patients with moderate neutropenia, 8.7% were minors, 70% were in the 18–64-year-old age group, and 21.3% were older than 64 years. Regarding gender, 30.7% of patients with moderate neutropenia were male, and 69.3% were female. Rural-origin patients with moderate neutropenia represented 38%, while urban-origin patients comprised 62%. Regarding the insurance regime, 46.7% of patients with moderate neutropenia were under the subsidized regime, and 53.3% were under the contributory regime.

For patients with severe neutropenia, 9.5% were minors, 66.7% were in the 18–64-year-old age group, and 23.8% were older than 64 years. Regarding gender, 39.7% of patients with severe neutropenia were male, and 60.3% were female. Regarding origin, 44.4% of patients with severe neutropenia came from rural areas, and 55.6% came from urban areas. As for the insurance regime, 41.3% of patients with severe neutropenia were under the subsidized regime, and 58.7% were under the contributory regime.

Finally, an association analysis was conducted using the chi-square test for each sociodemographic factor concerning the type of neutropenia. Results indicated that age, gender, origin, and insurance regime showed no significant associations (p-value > 0.05) with the type of neutropenia. Therefore, it can be stated that these sociodemographic factors are not related to the type of neutropenia with a 95% confidence level.

Figure 1 shows that breast cancer was the most frequent diagnosis among the patients (33.3%), followed by lymphomas (10.8%), colon cancer (7.0%), acute lymphoid leukemia (5.6%), cervical cancer (4.2%), multiple myeloma (3.8%), and anemia. When analyzing the figure by gender, it was found that all the patients with breast cancer were female, representing 32.9% of the diagnoses. Similarly, 4.7% and 3.8% of the patients were male with lymphoma or colon cancer, respectively. Likewise, when analyzing by age, it was observed that most of the patients with breast cancer were 64 years old or younger, while the percentage of patients with breast cancer older than 64 years was 8%. The percentage of patients older than 64 years with lymphoma or colon cancer was 1.9% and 2.3%, respectively. Finally, regarding the origin of the patients, breast cancer and colon cancer were more common in patients from urban areas. In contrast, those from rural areas were primarily affected by lymphomas, acute lymphoid leukemia (ALL), and multiple myeloma.

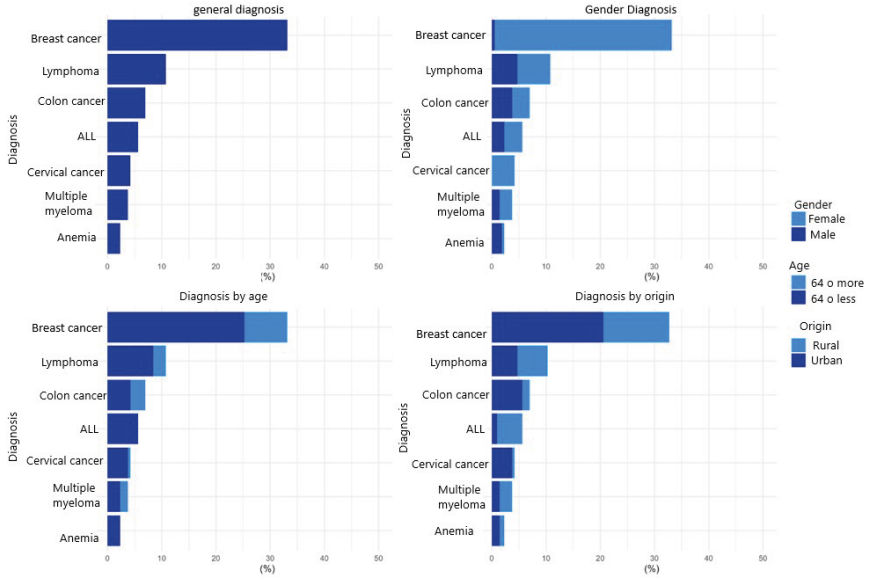

Figure 1. Common diagnoses in general and by sociodemographic factors.

Figure 2 shows the most common treatments applied to the patients in this study, both in general and by sociodemographic factors. The most frequent treatment was cyclophosphamide plus doxorubicin (19.7%), followed by carboplatin plus paclitaxel (8.9%). The treatment graph by gender highlighted a notable disparity in the number of treatments applied between genders. Regarding

the age group, it was observed that the most common treatments were applied to patients under 64 years of age. Finally, a higher frequency of these treatments was observed in patients from urban areas, except for those who received R-CHOP, which was more frequent in patients from rural areas.

Figure 3 shows the most frequent comorbidities in general and by sociodemographic factors. It was observed that hypertension (HTN) was the most common comorbidity overall (13.6%), followed by diabetes mellitus (DM) or the combination of both (HTN + DM). When analyzing comorbidities by gender and age group, it was observed that most of the patients with HTN were female and 64 years or younger. Regarding the origin of the patients, the prevalence of HTN was similar in both rural and urban areas.

Figure 4 shows the classification of neutropenia in general and by sociodemographic factors; 70.4% of the patients had moderate neutropenia, while 29.6% had severe or mild neutropenia. When analyzing neutropenia classifications by age group and place of origin, it is evident that most patients with severe neutropenia were 64 years or younger or came from urban areas. Additionally, the majority of patients with moderate or severe neutropenia were female.

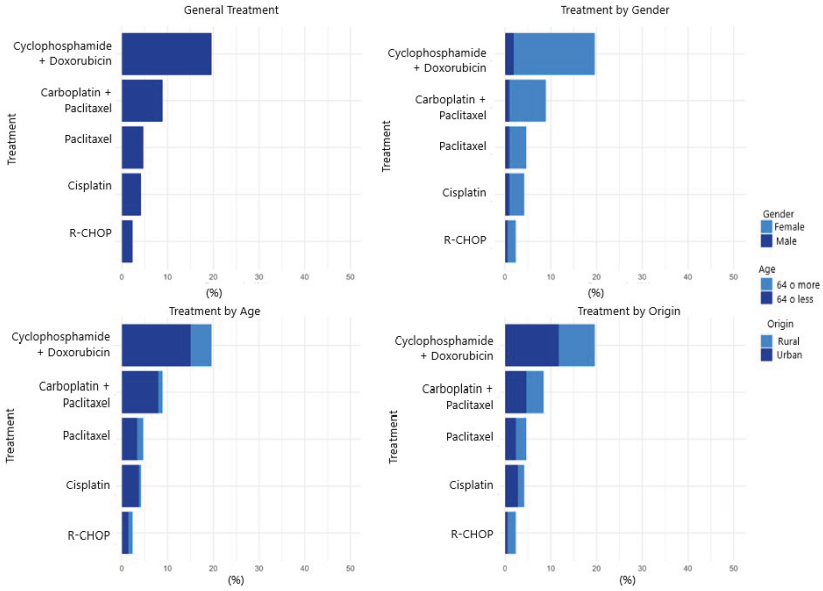

Figure 2. Common treatments in general and by sociodemographic factors.

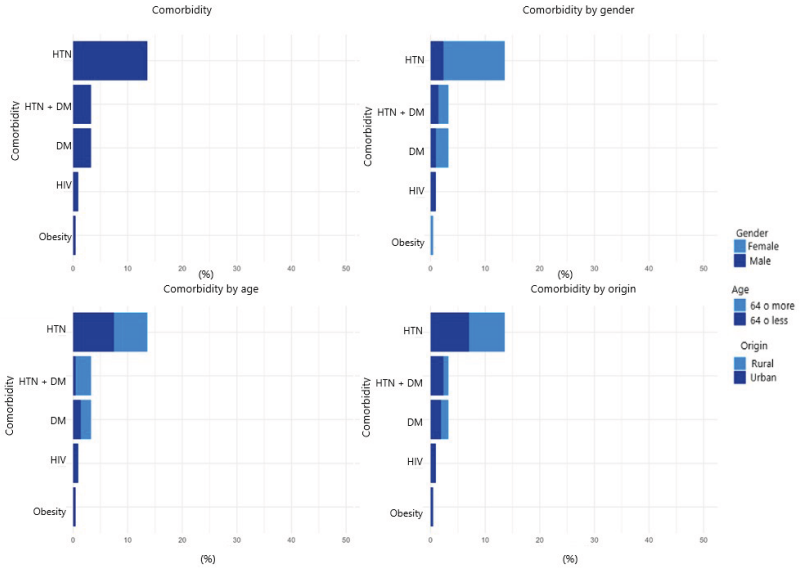

Figure 3. Common comorbidities in general and by sociodemographic factors.

Figure 5 presents the classification of neutropenia related to the patient's most frequent diagnoses, treatments, and comorbidities. It was observed that most patients with breast cancer had a moderate neutropenia; similarly, the majority of patients with lymphoma or colon cancer had moderate neutropenia. When analyzing the treatments provided and the patient's comorbidities, it was found that most patients who received cyclophosphamide plus doxorubicin as treatment had moderate neutropenia. Furthermore, approximately 83% of patients with hypertension (HTN) had a moderate neutropenia, while most (57.1%) of the patients with DM or HTN had a severe neutropenia.

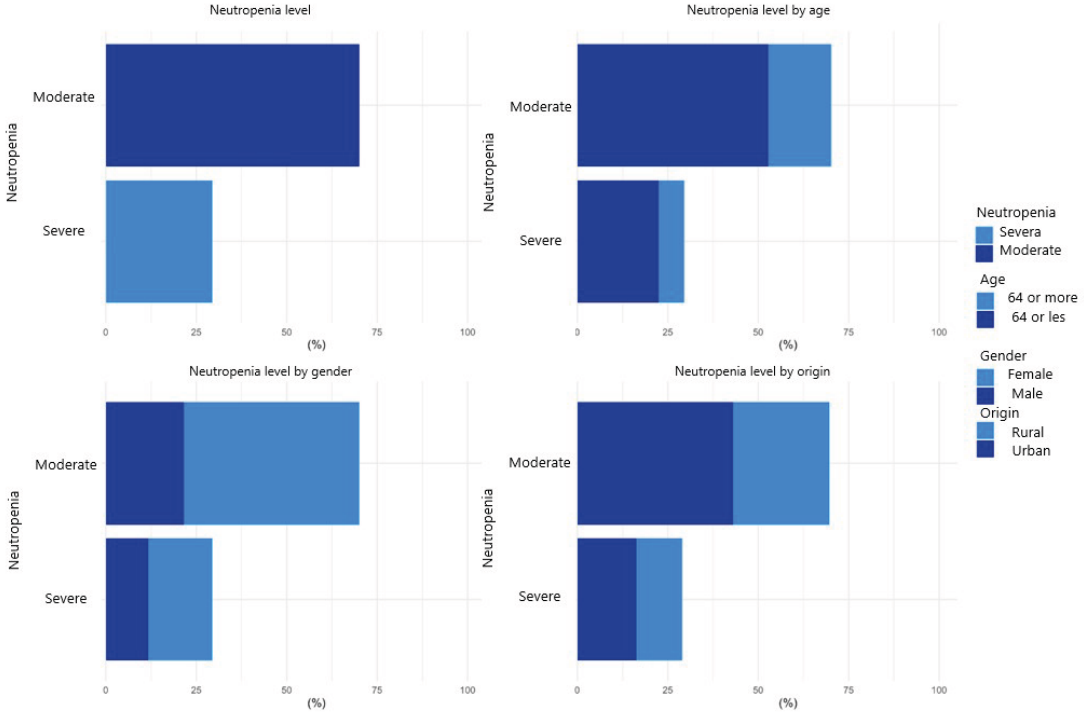

Figure 4. Neutropenia classification in general and by sociodemographic factors.

5. Discussion

This study addresses the prevalence of neutropenia in a tertiary-level institution specialized in managing hematologic and oncologic diseases and providing care for patients with other conditions. Neutropenia is a critical complication in patients undergoing cytotoxic and immunosuppressive therapies, particularly with agents such as anthracyclines and taxanes, due to their considerable impact on morbidity and mortality [2].

Our results showed that the average age of patients with neutropenia was 50 ± 19 years, consistent with previous studies investigating febrile neutropenia in hematologic and oncologic neoplasms [9,11]. The predominant diagnosis was breast cancer, present in 33.3% of the cases, all in female patients. This proportion can be attributed to the morbidity profile of the institution, where breast cancer constitutes 29% of the total treatments. This could explain the higher prevalence of neutropenia in women, with a ratio of 1.6:1 [12,13].

Literature has documented the risk of neutropenia associated with various chemotherapy regimens. For example, it has been reported that regimens combining anthracyclines and taxanes can carry a risk of neutropenia of up to 20% in specific diagnoses, as mentioned in the study by Sobrevilla et al. [14]. Our findings corroborate this association, as cyclophosphamide plus doxorubicin was the most frequent treatment (19.7%), followed by carboplatin plus paclitaxel, both commonly used in breast and cervical cancer patients.

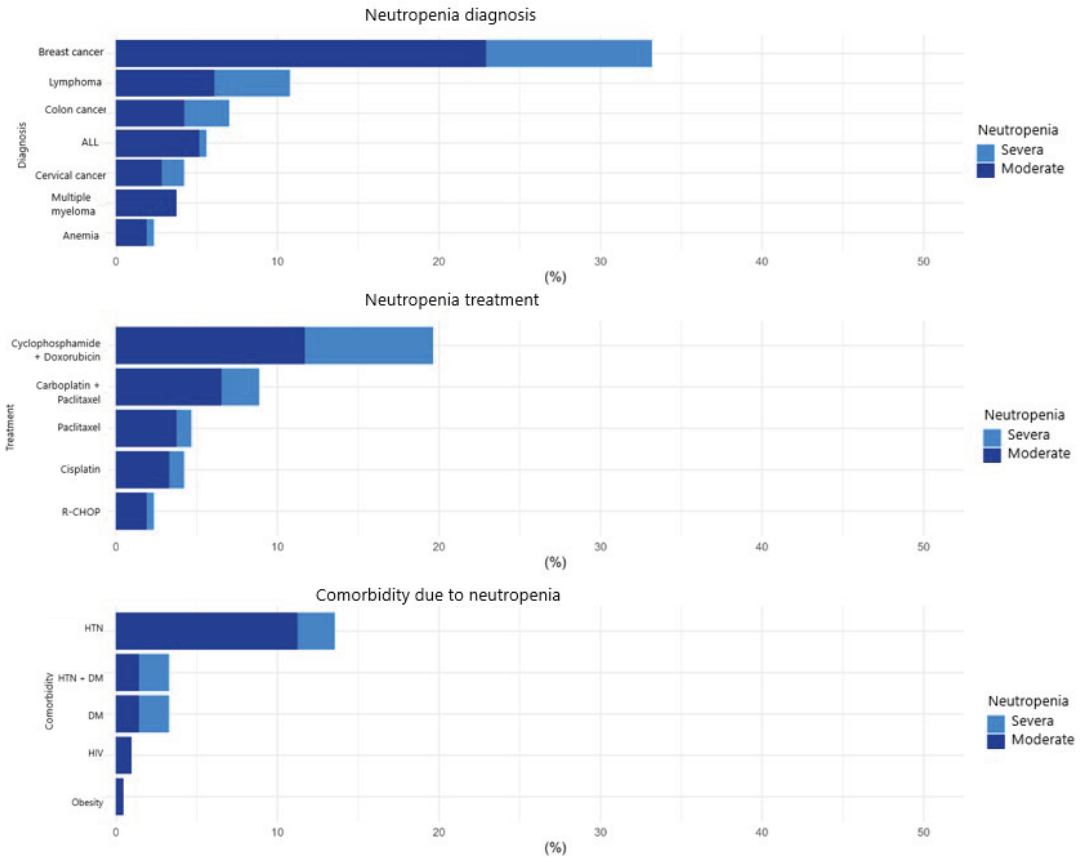

Figure 5. Type of neutropenia according to the most frequent diagnoses, treatments, and comorbidities.

It is important to note that neutropenia is one of the most common complications in patients with oncologic and hematologic conditions, with the potential to interrupt cytotoxic treatment, negatively affecting therapeutic response and quality of life [6,14]. In our study, most neutropenia cases were moderate (70.4%), a finding that aligns with existing literature, which suggests that in the general population, neutropenia tends to present as mild to moderate [13]. However, even moderate forms of neutropenia can increase the risk of opportunistic infections, particularly in immunocompromised patients due to their underlying disease.

Finally, no significant associations were found between the severity of neutropenia and factors such as age, gender, or geographical origin of the patients. This finding underscores that, despite demographic differences, the severity of neutropenia seems to be more influenced by factors intrinsic to the disease and treatments received than by the sociodemographic characteristics of the patients.

6. Conclusions

Neutropenia, a prevalent complication in patients undergoing cytotoxic or immunosuppressive therapies, showed a higher incidence in women; it is attributed to the high prevalence of breast cancer, the most frequent pathology both in the institution and nationally and globally. According to the Pan American Health Organization, more than 491 thousand cases are diagnosed annually in the Americas, and in 2023, the High-Cost Account reported that 49.94% of the 58,813 new cases in the country corresponded to breast cancer (15).

Neutropenia increases the risk of opportunistic infections, as neutrophils, responsible for phagocytosis and releasing bactericidal proteins such as cathepsins and lysozyme, which generate extracellular traps (NETs). Uncontrolled inflammation can lead to excessive NET formation during sepsis, thus causing multiple

organ dysfunction (16). Early diagnosis and appropriate treatment strategies were crucial, especially in outpatient settings.

Early identification of neutropenia helped prevent severe infectious complications that could threaten patients' lives. Factors such as demographics and treatment type influenced severity and prognosis and highlighted the importance of preventive measures, active surveillance, and monitoring protocols to optimize clinical management.

This study underscores the need to continue research and develop strategic guidelines that individualize the management of neutropenia based on hematologic-oncologic diagnosis, stage, and comorbidities.

7. Administrative information

7.1 Additional files

None declared by the authors.

7.2. Acknowledgements

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7.3. Author contributions

Dr. Anillo: Made significant contributions to the statistical analysis and interpretation of the results of the study on the prevalence of neutropenia. Her experience in applied biostatistics was crucial to ensure a rigorous analysis of the data and to obtain relevant conclusions. **Dr. Ángel, Dr. Osorio:** Actively participated in the design of the study and in the collection of data related to the prevalence of neutropenia at the institution. In addition, they contributed with a critical review of the intellectual content of the manuscript. **Dr. Ángel, Dr. Ibáñez:** They were involved in the conception of the study and the interpretation of the clinical data. Their experience in hematology allowed to evaluate the clinical relevance of neutropenia in patients. **Dr. Mieles:** Coordinator of pre-transfusion management, supported the collection and analysis of data related to neutropenia, providing her technical expertise **Dr. Gillian:** From her perspective in clinical epidemiology and hematology, she participated in the design of the study and in the interpretation of data on the prevalence of neutropenia. **Dr. Villegas:** Contributed his experience in clinical effectiveness and data management, supporting the study design, data interpretation, and integration of technological innovations in the analysis. **Drs. Rosado, Osorio T., Cantillo, Arroyo, González, and Padilla:** As physicians at the institution, they made significant contributions to the collection and analysis of data from patients with neutropenia.

7.4. Financing

No author has received direct funding from any commercial entity that could influence the results or conclusions presented in this study

7.5. Availability of data and materials

The data used in this study were collected at our institution with the due authorization of the coordinators of the areas involved. The bibliographic review included related studies, but a small amount of literature specific to our region was found.

7.6. Statements

7.6.1. Ethics committee approval

Clinical cases were not needed

7.6.2. Declaration

Authors assume full responsibility for the opinions and conclusions presented in this article. The journal is not responsible for any errors or omissions, nor for the interpretations or applications derived from the information contained herein

7.6.3. Consent for publication

The patient's legal guardian provided written consent for the publication of this clinical case.

7.6.4. Conflicts of interest

Authors declare that there are no conflicts of interest regarding this manuscript titled "Prevalence of Neutropenia in a Level IV Healthcare Institution in the City of Barranquilla." All authors have independently participated in the development, analysis, and interpretation of data, as well as writing the article.

8. References

1. Eberl M, Davey M. Neutrófilos [Internet]. London: British Society for Immunology; 2023 [cited 2024 Jan 16]. Available from: https://www.immunology.org/public-information/bitesized-immunology/cells/neutrophils
2. Dale DC. Neutropenia [Internet]. Kenilworth, NJ: Manual MSD; 2023 [cited 2024 Jan 16]. Available from: https://www.msdmanuals.com/es-mx/professional/hematología-y-oncología/leucopenias/neutropenia
3. Schwartzberg LS. Neutropenia: etiology and pathogenesis. Clin Cornerstone. 2006;8 Suppl 5:S5–11
4. Boxer LA. How to approach neutropenia. Hematology Am Soc Hematol Educ Program. 2012;2012:174–82.
5. Freifeld AG, Bow EJ, Sepkowitz KA, Boeckh MJ, Ito JI, Mullen CA, et al. Clinical Practice Guideline for the Use of Antimicrobial Agents in Neutropenic Patients with Cancer: 2010 Update by the Infectious Diseases Society of America. Clin Infect Dis. 2011;52(4):e56–93.
6. Lyman GH, Abella E, Pettengell R. Risk factors for febrile neutropenia among patients with cancer receiving chemotherapy: A systematic review. Crit Rev Oncol Hematol. 2014 Jun;90(3):190–9.
7. Hashiguchi Y, Kasai M, Fukuda T, Ichimura T, Yasui T, Sumi T. Chemotherapy-induced neutropenia and febrile neutropenia in patients with gynecologic malignancy. Anticancer Drugs. 2015 Nov;26(10):1054–60.
8. Laskey RA, Poniewierski MS, Lopez MA, Hanna RK, Secord AA, Gehrig PA, et al. Predictors of severe and febrile neutropenia during primary chemotherapy for ovarian cancer. Gynecol Oncol. 2012 Jun;125(3):625–30.
9. Garzón JR, Isaza N, Posada A, Méndez R, Arenas J, Ardila MP, et al. Características clínicas y microbiológicas de pacientes con neutropenia febril en un hospital universitario. Infectio. 2019;23(4):347–52.
10. García K, Londoño J, Villegas L, González M, Correa A. Diagnóstico microbiológico en neutropenia febril secundaria a quimioterapia por malignidad hematológica: descripción de una cohorte. Acta Med Colomb. 2020;45(2):71–7.
11. Madrid C, Díaz L, Combariza J, Gálvez K, Olaya V, Ramírez I, et al. Epidemiología de la neutropenia febril en pacientes adultos con neoplasia hematológica, en un período de 26 meses en el Hospital Pablo Tobón Uribe, Colombia. Rev Chil Infectol. 2013;30(2):195–201.

12. González-Leal XJ, Molina-Gamboa J, Bolaños-Meade J, Villela L. Aislamientos microbiológicos en pacientes con neutropenia febril: ¿es apropiado el uso de las guías clínicas internacionales en México? Rev Hematol Mex. 2013;14(3):113–9.

13. Lobatón JF, González ME, Aruachán SE, Meza LA, García M, Borré DP, et al. Caracterización clínico patológica y hallazgos microbiológicos de la neutropenia febril en pacientes oncohematológicos en una clínica privada en la ciudad de Montería-Colombia. Rev Colomb Hematol Oncol. 2020;7(2):33–41.

14. Sobrevilla PJ, Sobrevilla N, Ochoa FJ. Neutropenia inducida por quimioterapia: el punto de vista del oncólogo. Gac Mex Oncol. 2016;15(6):344–9.

15. Organización Panamericana de la Salud. Cáncer de mama [Internet]. Washington, D.C.: OPS/OMS; 2021 [updated 2021 Oct 17; cited 2024 Nov 2]. Available from: https://www.paho.org/es/temas/cancer-mama

16. Godínez-Vidal AR, Carrillo-Esper R, Cabello-Aguilera R. Trampas extracelulares de neutrófilos en sepsis. Med Crit [Internet]. 2020;34(2):156–9. Epub 2022 Aug 8 [cited 2024 Nov 6]. Available from: http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2448-89092020000200156. doi:10.35366/93970

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Study of the prevalence of breast cancer risk factors at a Specialty Hospital in Manabí - Ecuador

Estudio de prevalencia de factores de riesgo de cáncer de mama en un hospital de especialidades en Manabí - Ecuador

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ABSTRACT
Background: Breast cancer is the most commonly diagnosed cancer among women in the western hemisphere and the one with the highest incidence in the female population from Ecuador; the predisposition to develop breast cancer responds to several factors. **Objective**: To determine breast cancer risk factors in patients of the mammography office at the Dr. Verdi Cevallos Regional Hospital. **Methods:** Observational, descriptive, retrospective, and cross-sectional research with a sample of 143 women who attended mammography screening at said Hospital during the period January-December 2020. A 22-question survey on risk factors for breast cancer prepared by specialists in the area was implemented. **Results and conclusions:** The most significant risk factors in the study, in order of frequency, were family history of cancer, not breastfeeding, early menarche, and hormone replacement therapy.

Keywords: breast cancer, risk factors, mammography, prevalence.

RESUMEN
Introducción: El cáncer de mama es el cáncer más diagnosticado entre las mujeres en el hemisferio occidental, y representa el cáncer con mayor incidencia en la población femenina de Ecuador. La predisposición a desarrollar cáncer de mama responde a varios factores. **Objetivo:** Determinar la prevalencia de los factores de riesgo de cáncer de mama en pacientes que acudieron a la cita de mamografía del Hospital Regional Dr. Verdi Cevallos. **Métodos:** Investigación de tipo observacional, descriptivo y transversal; con una muestra de 143 mujeres que acudieron a la cita de mamografía del Hospital Regional Dr. Verdi Cevallos Balda durante el periodo enero-diciembre del año 2020. Se aplicó, un cuestionario referente a factores de riesgo sobre cáncer de mama de 22 preguntas, elaborado por los especialistas del área. **Resultados:** Los factores de riesgo más frecuentes en el estudio fueron: antecedentes familiares de padecimiento de cáncer, no lactancia materna, menarquia temprana y terapia de remplazo hormonal. **Conclusión:** Se observó que los factores de riesgo de cáncer de mama por orden de frecuencia son: antecedentes familiares de padecimiento de cáncer, menarquia temprana, no lactancia materna y terapia de remplazo hormonal.

Palabras Clave: cáncer de mama, factores de riesgo, mamografía, prevalencia.

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1. Introduction

Breast cancer is one of the most common pathologies in women and has a great impact on society. In Ecuador, the incidence of breast cancer in 2020 was 3,563 cases per 100,000 women [1]. Since it is currently unpreventable, early detection has become the cornerstone of most efforts to reduce breast cancer mortality [2].

In the case of breast carcinoma, cancer stem cells can accumulate additional genetic changes because they cannot undergo self-renewing cell division, which drives tumor progression and drug resistance [3]. Studies show that deficiency of a pair of anti-oncogenes increases the risk of developing breast cancer due to dysregulation at the point of cell cycle control, abnormal centrosome duplication, genetic instability, and apoptosis; these are BRCA1 and BRCA2 located on chromosomes 17q21 and 13q12, respectively [4].

In addition to this risk factor, other factors that, on their own, are more relevant and make people more prone to suffer from this disease have been studied, e.g., a history of familial cancer in the first line of consanguinity (especially breast, uterus, and ovaries), obesity, absence of breastfeeding and nulliparity; the age of menarche, the age of menopause, not to mention that the risk increases gradually with age, especially in the fourth decade of life [5] [6].

Worldwide, in 2020, there were an estimated 2,261,419 new cases of breast cancer and 684,996 deaths from this disease;, mortality being much higher in low-income sectors [7]. In Ecuador, the most common cancers in women according to their incidence are breast, 22.20%; cervix, 9.50%; and thyroid, 9.08% [1]. Therefore, the objective of this study is to determine the prevalence of breast cancer risk factors at different levels in health institutions in Ecuador.

2. Materials and Methods

2.1. Design and context

This is an observational and descriptive study that follows the recommendations of the STROBE guideline. The population consisted of the patients who attended mammography screening at the Dr. Verdi Cevallos Balda Regional Hospital during the period January-December 2020. The applied questionnaire was created by researchers from the mammography area at the Hospital, 10 out of its 15 items coincide with other international tools for breast cancer risk assessment, including elements of the Gail Model, BODIAN survey, and Tyrer-Cuzick model.

2.2. Participants

Patients aged 18 years and older were included, with a known population of 225 patients. The sample size was calculated with 95% confidence and 5% margin of error, equivalent to 143 patients, and simple random sampling was applied to collect data.

2.3. Variables

The study variables were age at menarche, age at menopause, number of children, number of deliveries, breastfeeding, comorbidities (diabetes mellitus and arterial hypertension), history of breast trauma, use of oral contraceptives, use of hormone therapy, nipple discharge, and presence of nodule on palpation.

2.4. Data Source

This study used primary databases and was evaluated and approved by the Institutional Bioethics Committee of Universidad Técnica de Manabí, Ecuador. In addition, it complied with the ethical

principles of research on human beings dictated by the Declaration of Helsinki. The general principle (numeral 6) on the purpose of medical research was addressed, i.e., understanding our intervention in health; also, numerals 24 and 25 on privacy, confidentiality and informed consent, as well as the bioethical principles of autonomy, beneficence, non-maleficence and justice.

2.5. Bias control

Data collection was carried out by a researcher who verified in each medical record that the inclusion requirements were met and recorded them in the corresponding Excel template, in which each variable of interest was stipulated. In case of doubts in any variable register, expert researchers in the area (mastologist, oncologist or epidemiologist) were consulted. The medical history was reviewed, if it lacked information or was incomplete, mastology evaluations were verified; when none was available, data were extracted from other specialties notes related to the care of the patient due to her oncological condition (pain and palliative care or oncological rehabilitation).

2.6. Statistical methods

The information obtained from the questionnaire and physical examination was processed in a Microsoft Excel spreadsheet (Windows 10). Processing included the calculation of descriptive measures for qualitative variables, absolute frequencies and percentages, as well as quantitative variables, mean and standard deviation.

3. Results

All 143 patients treated in the mammography clinic at the Dr. Verdi Cevallos Balda Regional Hospital completed the information on the variables studied. Among the demographic aspects of the sample studied, 100% were female patients; cases were divided by age group, the most frequent being 41-50 years old (47.55%); 97.90% self-identified as being of Latino ethnic origin; 51% had had at least one mammogram study before; meanwhile, 40% had had at least one breast ultrasound (Table 1).

Table 1. Sociodemographic characteristics of the sample studied.

Sociodemographic characteristics	Percentage	Sociodemographic characteristics	Percentage
Age		Mammography	
35-40 years old	6.29%	Yes	51.05%
41-50 years old	47.55%	No	48.95%
51-60 years old	34.27%	Breast ultrasound	
61-65 years old	7.69%	Yes	39.86%
>65 years old	4.20%	No	60.14%
Ethnic origin			
Latino	97.90%		
Afro-Ecuadorian	2.10%		
White	0.00%		

Regarding the age at menarche and age at menopause, the highest percentage ranged between 13-15 years old (51.75%), followed by 46-50 years old (22.38%). As for the factors associated with the risk of developing breast cancer, it was found that the average number of children was 3 (41.96%); and 48.25% of women breastfed their children from 12 to 24 months. Data also revealed that 11.89% of patients have diabetes mellitus, and 8.39% have high blood pressure; 23.78% of patients reported having suffered breast trauma at some point in their lives, whether related to blows, punctures for biopsies or breast surgery; 48.25% of the patients mentioned having close relatives who suffered or currently suffer from cancer. Regarding the use of oral contraceptives at some point in their lives, 15.38% reported having used them; 4.90% of patients stated that they had used hormone therapy at some point in their lives, more specifically thyroid hormone therapy (Table 2).

Table 2. Factors associated with the risk of developing breast cancer.

Risk factors	Percentage
Age at menarche	
<10 years old	4.20%
10-12 years old	32.90%
13-15 years old	54.50%
16-18 years old	7.00%
>18 years old	1.40%
Age at menopause	
<40 years	7.69%
40-45 years old	16.10%
46-50 years old	24.50%
51-55 years old	8.04%
>55 years old	2.37%
Not applicable	41.30%
Number of children	
1	4.21%
2	25.91%
3	32.18%
4	16.75%
>4	16.75%
No children	4.20%
Number of vaginal deliveries	
1	15.22%
2	30.43%
3	23.91%
4	10.87%
>4	19.57%
Number of caesarean section deliveries	
1	40.91%
2	25.00%
3	32.95%
4	1.14%
>4	0.00%
Number of abortions	
1	60.00%
2	20.00%
3	17.50%
4	2.50%
>4	0.00%
Breastfeeding	
Yes	93.00%
No	2.80%
No children	4.20%
Breastfeeding time	
<3 months	2.10%
3-6 months	7.71%
7-12 months	33.59%
13-24 months	49.70%
Never	2.80%
No children	4.20%
Diabetes mellitus	
Yes	13.28%
No	86.72%

Table 2. *Factors associated with the risk of developing breast cancer. (Continuación)*

High blood pressure	
Yes	13.29%
No	86.71%
History of breast trauma	
Yes	26.60%
No	73.40%
History of familial cancer	
Yes	49.70%
No	50.30%
Use of contraceptives	
< 1 year	2.80%
1-3 years	5.59%
4-5 years	4.90%
6-10 years	0.70%
>10	1.40%
Never	84.62%
Use of hormone therapy	
Yes	10.50%
No	89.50%
Nipple discharge	
Yes, left breast	7.69%
Yes, right breast	4.20%
Yes, bilateral	4.20%
No	83.92%

From the positive breast discharge reports, 7.69% indicated the presence of nipple discharge in the left breast (Table 2). Data regarding palpation of a nodule in the breast region were positive in 30.07% of patients, with the upper external quadrant of the left breast being the most affected with 25.58% (Table 3).

Table 3. Presence of breast nodules according to the breast quadrant in the study population.

Breast	Quadrants	Frequency	Percentage
Right breast	Upper internal	6	4.20%
	Upper external	8	5.59%
	Lower internal	2	1.40%
	Lower external	5	3.50%
Left breast	Upper internal	2	1.40%
	Upper external	13	9.09%
	Lower internal	5	3.50%
	Lower external	11	7.69%
Bilateral		5	3.50%
No palpable nodule		86	60.14%

Finally, the results of the BIRADS (Breast Imaging Reporting and Records System) of the sample are as follows: BIRADS 0, 25.70%; BIRADS 1, 40.30%; BIRADS 2, 18.90%; BIRADS 3, 9.10%; BIRADS 4, 7.00%; and BIRADS 5, 0.70% (Table 4).

Table 4. Number of positive risk factors in the patients in the study, and the BIRADS of their mammogram.

N°	Score	BIRADS	N°	SCORE	BIRADS	N°	Score	BIRADS
1	4	0	51	2	0	101	3	2
2	3	1	52	4	1	102	2	4
3	2	0	53	3	2	103	2	0
4	2	0	54	3	2	104	2	1
5	1	0	55	5	1	105	3	3
6	2	1	56	4	1	106	3	4
7	2	1	57	2	0	107	2	1
8	1	2	58	2	2	108	3	0
9	2	0	59	2	1	109	3	1
10	3	0	60	4	2	110	3	1
11	3	2	61	5	5	111	2	1
12	3	2	62	2	1	112	3	4
13	2	1	63	5	2	113	3	1
14	4	1	64	4	3	114	2	1
15	1	1	65	3	1	115	2	0
16	3	1	66	4	1	116	2	4
17	1	2	67	4	3	117	3	0
18	4	2	68	1	2	118	4	3
19	2	1	69	4	2	119	2	0
20	4	1	70	4	0	120	3	2
21	3	0	71	6	3	121	4	1
22	3	0	72	2	0	122	4	0
23	1	0	73	2	1	123	5	0
24	1	0	74	3	1	124	3	2
25	4	0	75	2	0	125	4	0
26	3	1	76	2	2	126	5	4
27	2	1	77	6	4	127	3	3
28	5	1	78	3	3	128	2	0
29	2	2	79	4	0	129	5	0
30	2	2	80	3	0	130	4	0
31	2	1	81	3	0	131	3	1
32	2	1	82	2	2	132	2	1
33	2	2	83	4	3	133	2	0
34	3	1	84	3	2	134	1	1
35	2	1	85	3	0	135	3	1
36	1	1	86	4	2	136	5	4

37	3	2	87	4	3	137	3	1
38	3	2	88	1	4	138	2	1
39	3	2	89	3	1	139	2	1
40	3	1	90	2	1	140	4	2
41	3	1	91	1	1	141	4	3
42	4	1	92	2	0	142	3	1
43	3	1	93	2	4	143	5	3
44	2	1	94	2	0			
45	3	1	95	4	2			
46	2	0	96	5	3			
47	3	1	97	3	1			
48	4	0	98	3	4			
49	4	1	99	3	0			
50	3	3	100	4	2			

The questionnaire applied by the researchers in the mammography area of the Dr. Verdi Cevallos Balda Regional Hospital coincides with 10 of its 15 items, with other international tools for breast cancer risk assessment including elements of the Gail Model, BODIAN survey and Tyrer-Cuzick model. (Table 5).

Table 5. Factores incluidos en las herramientas comunes de evaluación del riesgo de cáncer de mama.

	HVCB QUESTIONNAIRE	**INTERNATIONAL TOOLS**					
	FACTOR	**Gail**	**Chen**	**BODIAN**	**T-C IBIS**	**Petracci**	**ALL**
1	Age of the patient	X	X	X	X		X
2	Patient's ethnicity	X		X			X
3	Age of menarche.	X	X	X	X	X	X
4	Age of menopause.		X		X		X
5	Number of children.			X	X		X
6	Number of births, caesarean sections and abortions.						
7	Breastfeeding.						
8	Comorbidities (Diabetes and high blood pressure).						
9	History of breast trauma.					X	X
10	A history of familial cancer.	X	X	X			X
11	Use of oral contraceptives				X		
12	Use of hormone therapy						
13	Nipple discharge.			X			X
14	Presence of nodule on palpation.			X			X
15	BIRADS		X		X		X

4. Discussion

Ecuador's population pyramid is progressive, with a total of 17,373, 662 inhabitants in 2019; male population is slightly higher than the female population with 50.02% [8]. The entire sample with respect to sex is female; traditional research had suggested that male breast cancer accounted for about 1% of all breast cancers. However, although the incidence in men has also increased, the increase is more rapid in women, causing the ratio of male to female cases to decrease [2]. To this day, it is still unusual for men to go for mammography appointments.

Although breast carcinomas can occur at any age, they are more common in older women [9]. With respect to age range, the group that most frequently attended mammography screening in this period were women between 41 and 50 years old. According to a 2016 analysis of deaths in the Americas, approximately 99.3% and 71.2% of all breast cancer-associated deaths were reported in women over 40 and 60 years of age, respectively [10].

Several authors associate breastfeeding inversely with the overall risk of breast cancer, although it may differ in the subtypes of breast cancer defined by the recipient's status, which reflect different mechanisms of carcinogenesis [11]. In this study, 48.25% of women breastfed their children between 12 and 24 months, although 11.86% of them breastfed less than one year. In addition, the average number of children was 3 (41.96%). Even though breastfeeding and parity are highly correlated, a large pooled analysis showed a 4% reduction in breast cancer risk associated with each 12 months of breastfeeding, which was independent, in addition to a 7% reduction in risk with each live birth [11].

The highest percentage of age at menarche in the study sample is 51.75% between 13-15 years old, followed by 10-12 years old with the 34.97%. In this regard, the mean age at menarche in a study conducted at the Shahid Rajai Babolsar Radiotherapy Center was 12 years old; it concluded that a younger age at menarche had a strong association with breast cancer [12]. Evidence posits that both late and early menopause have similar hormonal carcinogenic effects [13]. Ganz et al. reported that 15% of their sample were women with late menopause [14], while in our study, it was 10.41% of patients.

The study also considered comorbidities such as diabetes mellitus and hypertension: 11.89% of patients have diabetes mellitus, and 8.39% have high blood pressure. This was considered because recent studies reported a 20% increased risk of breast cancer in women diagnosed with type 2 diabetes mellitus due to insulin activation, modifications in insulin-like growth factor receptors in breast epithelial tissue, or modifications of sex hormone levels through insulin resistance and hyperinsulinemia [15].

The history of breast trauma at some point in their lives was positive in 23.78% of the patients, almost double compared to the study made in the Latin American population, which reported a 12% prevalence of breast trauma. It is defined as all those contusions, puncture wounds, cutting wounds, gunshot wounds or surgical manipulations of the breast, such as partial mastectomies, resections, biopsies, among others that have caused potential damage to the breast [16, 17].

A meta-analysis by Chen showed that the risk ratio for breast cancer in women over 70 years of age who carried BRCA1 or BRCA2 mutations was 57% and 49%, respectively [4]. Likewise, a cohort study using data from the UK population looked at breast cancer risk in relation to first-degree family history using a family history score (FHS). It showed that breast cancer risk increased significantly (P trend <0.0001) with higher FHS. There was a 3.5-fold increased risk (95% CI 2.56-4.79) for those with higher FHS versus those with lower FHS. For women who had two or more relatives with breast cancer, the conventional familial risk factor was higher, 95% CI 1.83-3.47 [18]. For example, the prevalence of BRCA1 or BRCA2 mutation was 13% (4/31) among Brazilian women diagnosed with breast cancer [19]. 48.25% of the patients who participated in the study mentioned having close relatives who have suffered or currently suffer from cancer, although genetic tests were not performed to observe mutations in BRCA1 or BRCA2.

15.38% of the total study stated that they had used oral contraceptives, most of them between 1-3 years (5.59%); however, various studies indicate that oral contraceptives do not increase the risk of breast cancer in women who stop using them for more than 10 years [20].

4.90% of patients reported having received thyroid hormone therapy. Nevertheless, the risk of breast cancer associated with thyroid-stimulating hormone-releasing hormone is higher in estrogen receptor-positive cancers compared to estrogen receptor-negative cancers, such as breast cancer. The increased risk of breast cancer decreases 2 years after stopping this hormone [21, 22].

The American College of Obstetricians and Gynecologists (ACOG) divides the assessment of risk factors into different groups: demographics (age, ethnicity), hormonal and reproductive (age at menarche and menopause, use of exogenous hormones, parity, age at first live birth), radiographic breast density, and personal breast history (biopsies with proliferative disease or atypia) [23]. A cohort study of the Kaiser Permanente Washington breast imaging registries included women without prior breast cancer, aged 40 to 73 years, to report the diagnostic accuracy of risk assessment for breast cancer over a 19-year period. This resulted in risk models combining classical risk factors with mammographic density being informative up to 19 years after risk assessment. Mammographic density helped to identify a greater number of women at the extremes of the risk distribution where preventive measures or different screening intervals could be considered to minimize the intervention associated with harm and the public health burden of breast cancer [24].

5. Conclusion

The most frequent risk factors in the study were family history of cancer, not breastfeeding, early menarche, and hormone replacement therapy. A large percentage of patients obtained BIRADS 2; however, the number of patients with BIRADS 0 is particularly high compared to other studies. Finally, the patients with BIRADS 4 and 5 (suggestive of malignancy) were 11, which translates into an important need for early screening tests, especially if there are strong risk factors such as those found in this study.

6. Administrative information

6.1 Additional files

None declared by the authors

6.2. Financing

The study was funded with each researcher's own resources.

6.3. Statements

6.3.1. Ethics committee approval

The protocol of this study was approved by the Institutional Bioethics Committee of the Technical University of Manabí (UTM II 2018-011-OF)

6.3.2. Conflicts of interest

None declared.

6.4. Author contributions

MRR Conceptualization, Methodology, Validation, Data Curation, Project Management, Visualization, Formal Analysis, Resources, Writing – Original Draft, Software, Writing-Proofreading & Editing, Research, **MVP** Supervision Conceptualization, Methodology, Validation, Data Curation, Project

Management, Visualization, Formal Analysis, Resources, Writing – Original Draft, Software, Writing-Proofreading & Editing, Research, **AMP** Supervision Conceptualization, Methodology, Validation, Data Curation, Project Management, Visualization, Formal Analysis, Resources, Writing – Original Draft, Software, Writing-Proofreading & Editing, Research, **JCB** Supervision Conceptualization, Methodology, Validation, Data Curation, Project Management, Visualization, Formal Analysis, Resources, Writing – Original Draft, Software, Writing-Proofreading & Editing, Research, Supervision.

7. References

1. Ministerio de Salud Pública (Ecuador). Ecuador figures – Breast Cancer [Internet]. Quito: Ministerio de Salud Pública; [cited 2021 Mar 4]. Available from: https://www.salud.gob.ec/cifras-de-ecuador-cancer-de-mama/
2. Schwartz GF. Carcinoma of the breast. In: Holzheimer RG, Mannick JA, editors. Surgical Treatment: Evidence-Based and Problem-Oriented [Internet]. Munich: Zuckschwerdt; 2001 [cited 2021 Mar 4]. Available at: https://www.ncbi.nlm.nih.gov/books/NBK6879/
3. Polyak K. Breast cancer: origins and evolution. J Clin Invest. 2007 Nov 1;117(11):3155-63.
4. Sun YS, Zhao Z, Yang ZN, Xu F, Lu HJ, Zhu ZY, et al. Risk factors and prevention of breast cancer. Int J Biol Sci. 2017 Nov 1;13(11):1387-97.
5. Knaul FM, Nigenda G, Lozano R, Arreola-Ornelas H, Langer A, Frenk J. Breast cancer in Mexico: an urgent priority. Salud Publica Mex. 2009;51 Suppl 2:s335-44.
6. Torres-Arreola LP, Doubova SV. Breast cancer: early detection at the primary care level. Rev Med Inst Mex Seguro Soc. 2007;45(2):157-66.
7. International Agency for Research on Cancer (IARC). GLOBOCAN 2008: Cancer Incidence and Mortality Worldwide [Internet]. Lyon: IARC; [cited 2021 Jan 23]. Available at: https://www.iarc.who.int/news-events/globocan-2008-cancer-incidence-and-mortality-worldwide/
8. Ecuador - Population pyramid 2019 [Internet]. datosmacro.com. [cited 2021 Mar 8]. Available at: https://datosmacro.expansion.com/demografia/estructura-poblacion/ecuador
9. Torres-Mejía G, Ángeles-Llerenas A. Reproductive factors and breast cancer: key findings in Latin America and worldwide. Salud Publica Mex. 2009;51 Suppl 2:s165-71.
10. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2017. CA Cancer J Clin. 2017;67(1):7-30.
11. Islami F, Liu Y, Jemal A, Zhou J, Weiderpass E, Colditz G, et al. Breastfeeding and breast cancer risk by receptor status—a systematic review and meta-analysis. Ann Oncol. 2015 Dec;26(12):2398-407.
12. Moslemi D, Ghanbari M, Esmaelzade S, Delavar MA. 77P Menarche age, contraception use and gravidity as risk factors for breast cancer: associations in a case-control study. Ann Oncol. 2016 Dec 1;27(suppl 9):ix23.
13. Izquierdo-González M, González-Pérez U, Alerm-González A, Jáuregui-Haza U. Quality of life in a group of Cuban women with breast cancer. Rev Haban Cienc Med [Internet]. 2008 Jun [cited 2024 Dec 13];7(2):[no pagination]. Available at: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1729-519X2008000200014&lng=es
14. Ganz PA, Greendale GA, Petersen L, Kahn B, Bower JE. Breast cancer in younger women: reproductive and late health effects of treatment. J Clin Oncol. 2003 Nov 15;21(22):4184-93.
15. Park YM, Bookwalter DB, O'Brien KM, Jackson CL, Weinberg CR, Sandler DP. A prospective study of type 2 diabetes, metformin use, and risk of breast cancer. Ann Oncol. 2021 Mar;32(3):351-9.
16. Uriburu JV, Gómez MA, Macagno A, Margossian J, Rojas RR, Uriburu JL. Breast trauma. Rev Argent Cir. 1994;[no volume]:140-5.
17. Farley M, Minkoff JR. Breast cancer screening and trauma history. Women Health. 2001;34(2):15-27.
18. Brewer HR, Jones ME, Schoemaker MJ, Ashworth A, Swerdlow AJ. Family history and risk of breast cancer: an analysis accounting for family structure. Breast Cancer Res Treat. 2017 Aug;165(1):193-200.
19. Amadou A, Torres-Mejía G, Hainaut P, Romieu I. Breast cancer in Latin America: global burden, patterns, and risk factors. Salud Publica Mex. 2014 Sep 13;56(5):547.

20. Washbrook E. Risk factors and epidemiology of breast cancer. Womens Health (Lond Engl). 2006 Jan;2(1):9-13.

21. Cuzick J. Hormone replacement therapy and the risk of breast cancer. Eur J Cancer. 2008 Nov; 44(16):2344-9.

22. Marchand E, Uzan C. Breast nodules. EMC - Tratado Med. 2016 Mar 1;20(1):1-5.

23. McClintock AH, Golob AL, Laya MB. Breast cancer risk assessment. Mayo Clin Proc. 2020 Jun;95(6):1268-75.

24. Brentnall AR, Cuzick J, Buist DSM, Bowles EJA. Long-term accuracy of breast cancer risk assessment combining classic risk factors and breast density. JAMA Oncol. 2018 Sep 13;4(9):e180174.

ONCOLOGÍA

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PEDIATRIC CANCER: CHARACTERIZATION OF INCIDENCE USING MULTIVARIATE AND SPATIAL TECHNIQUES. SOLCA GUAYAQUIL 2018-2022

CÁNCER PEDIÁTRICO: CARACTERIZACIÓN DE LA INCIDENCIA MEDIANTE TÉCNICAS MULTIVARIANTES Y ESPACIALES. SOLCA GUAYAQUIL 2018-2022

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Background: Cancer is one of the leading causes of death in children and adolescents in the world; its incidence increases over time. Being the objective to characterize the incidence of pediatric cancer in SOLCA Guayaquil in the period 2018 - 2022 through the application of multivariate and spatial techniques.

Methods: Observational, ecological study; the universe were patients between 0 to 19 years diagnosed with cancer in SOLCA Guayaquil during 2018 to 2022. Data were used from the hospital registry, taking the variables: year of incidence, sex, age, tumor type, morphology, province and canton of residence. The types of cancer were grouped according to the International Classification of Childhood Cancer (ICCC), where multivariate HJ-Biplot techniques and MultBiplot software were applied; Table for georeferencing. Handling confidentiality and ethical principles.

Results: SOLCA Guayaquil diagnosed 1,433 new cases of cancer in children under 19 years of age during 2018 to 2022, a 67% increase in that period. 57% were children. Seventy-six percent come from provinces within SOLCA Guayaquil's area of influence, 62% from Guayas, followed by Los Ríos 8%; of the total from Guayas, 67% reside in Guayaquil, followed by Durán 7%, among others (Figure 1). Leukemias are more frequent with 42%, followed by lymphomas 16%; The HJ-Biplot identified three clusters relating pediatric cancers, sex and age group, with leukemias being more frequent in children aged 5 to 9 years, lymphomas in children aged 10 to 14 years, and retinoblastomas.

Conclusions: Pediatric cancer increased its incidence in SOLCA Guayaquil, with more leukemias in children aged 5 to 9 years, in the provinces of Guayas and Los Rios, so it is important to apply multivariate techniques for a holistic epidemiological analysis of pediatric cancer that contributes to diagnostic, prevention and control measures in this population group.

Figure 1: Spatial distribution of pediatric cancer incidence.

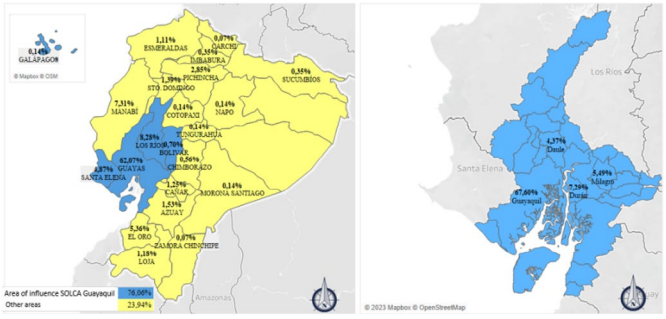
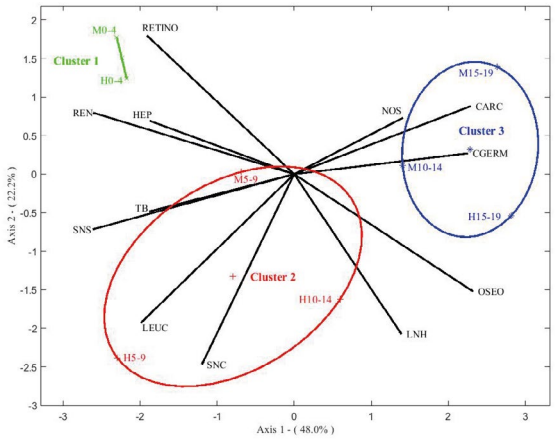
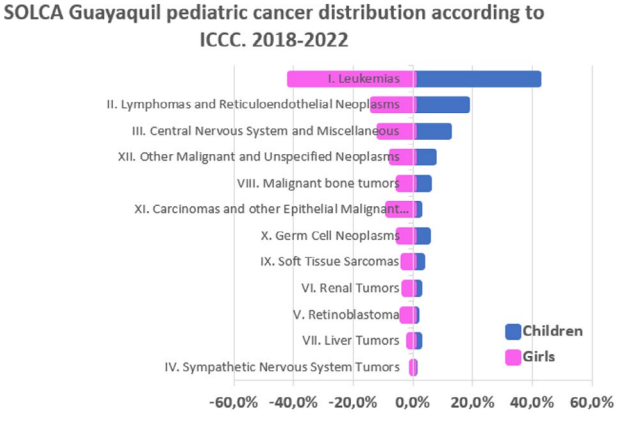


Figure 2. Incidence of pediatric cancer according to sex and age group.





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CROSS-CULTURAL ADAPTATION OF THE SUPPORTIVE CARE NEEDS SURVEY SURVEY - SHORT FORM 34 (SCNS-SF34) IN COLOMBIA

ADAPTACIÓN TRANSCULTURAL DE LA ENCUESTA SUPPORTIVE CARE NEEDS SURVEY - SHORT FORM 34 (SCNS-SF34) EN COLOMBIA

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Keywords: Transcultural adaptation; Neoplasia; Needs assessment; Nursing care.

Background. Cancer is an important public health problem in Colombia, so identifying needs is a relevant process that allows nurses to guide health care and improve the quality of service delivery. For this purpose, the Supportive Care Needs Survey - Short Form 34 (SCNS-SF34) could be used. Its cultural adaptation and validation have been carried out in several languages. However, there are no studies in Colombia to determine the characteristics of the cross-cultural adaptation process in oncology patients.

Methodology. Methodological study; the guidelines for the cross-cultural adaptation process proposed by Beaton et al. were followed, including a pilot test with 40 participants from an Oncology Center in Bogota, Colombia.

Results. The survey adapted to Colombian Spanish applied to patients with any diagnosis of cancer, who were receiving treatment both in and out of hospital, with a basic educational level of reading and writing, presented an overall comprehensibility level of 96.8%, and therefore did not require adjustments.

Conclusions. The Survey on Care Assistance Needs-Short Form 34 (SCNS-SF34) is the version adapted to the Spanish language of Colombia. It is necessary to review the content and construct validity before using the survey.

Note: Adapted survey, see appendix of the survey in the following link https://drive.google.com/file/d/1vG6ovukzqy74PlzM_VzYTt0INJ0q8LLT/view?usp=sharing

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SURVIVAL IN CERVICAL CANCER IIB-IVA SUBJECTED TO POST-CHEMO-RADIOTHERAPY SURGERY 2010-2014

SOBREVIDA EN CÁNCER DE CÉRVIX IIB-IVA SOMETIDOS A CIRUGIA POST QUIMIO-RADIOTERAPIA 2010-2014

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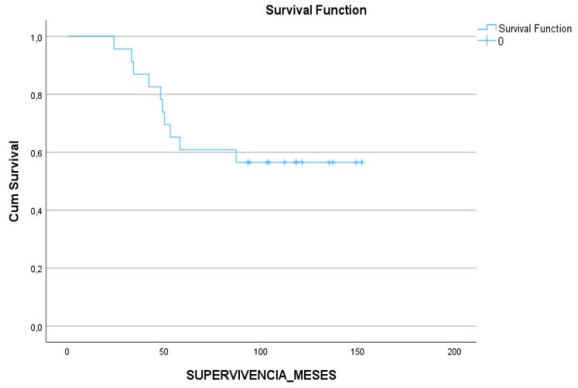
Background: Cervical cancer (CC) is one of the leading causes of cancer death in the world. The aim of this study is to know the overall survival (OS), survival by age group and histological type in patients with locally advanced cervical cancer who underwent salvage surgery after chemo-radiotherapy (QT+RT).

Methods: A retrospective observational cohort study of patients with locally advanced CC with stages IIB-IVA who received QT+RT treatment from January 2010 to December 2014 with follow-up until August 2023 in SOLCA-Guayaquil was performed. The statistical program SPSSv29 was used to analyze survival curves with the Kaplan-Meier estimator and Log-Rank test.

Results: Of a total of 1909 patients, 1581 were excluded because they did not meet eligibility criteria. The media survival result obtained was 107 months (m) (graph 1). Survival by histological type: 11 patients presented squamous carcinoma and 12 adenocarcinoma, the mean survival for squamous carcinoma being 111 months and for adenocarcinoma 94 months; however, in the Log-Rank statistical test (p:0.672) it is not significant, so it is estimated that survival is similar in the two histological types (graph 2). Regarding the calculation of survival by age in months (every 10 years) in the first group of 30 - 39 years is 98.1 m, of 40-49 years 118.8 m, 50-59 years 98.6 m, 60 or more years 56 m. Statistical significance in the Log-Rank statistical test (p:0.317) being non-significant survival.(see table 1).

Conclusions: Of the 23 patients with the mean age of 48 years with follow-up of 168 months are alive 13 (56%). There was no significant difference in survival by histologic type and age group.

Graph 1.



Graph 2.

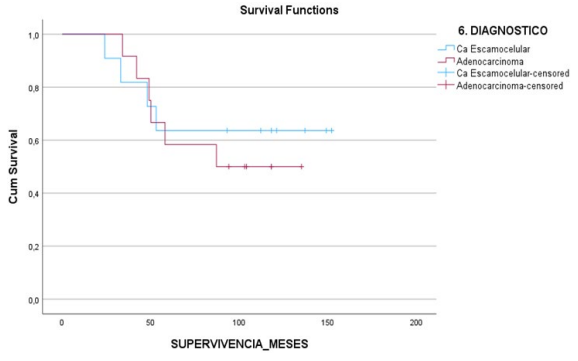


Table 1: Means and Medians for Survival Time

	Mean[a]				Median			
			95% Confidence Interval				95% Confidence Interval	
Grupos de Edad	Estimate	Std. Error	Lower Bound	Upper Bound	Estimate	Std. Error	Lower Bound	Upper Bound
30 a 39 años	98,167	16,850	65,141	131,192	87,000	.	.	.
40 a 49 años	118,857	19,954	79,746	157,968	.	.	.	.
50 a 59 años	98,667	12,929	73,327	124,007	.	.	.	.
60 o más años	56,000	14,418	27,741	84,259	34,000	10,000	14,400	53,600
Overall	106,696	11,004	85,128	128,263	.	.	.	.

a. Estimation is limited to the largest survival time if it is censored.

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THE DIAGNOSTIC AND THERAPEUTIC CHALLENGE OF PHYLLODES TUMOR OF THE BREAST: A CANCER CENTER STUDY

EL DESAFÍO DIAGNÓSTICO Y TERAPÉUTICO DEL TUMOR FILODES DE LA MAMA: ESTUDIO EN CENTRO ONCOLÓGICO

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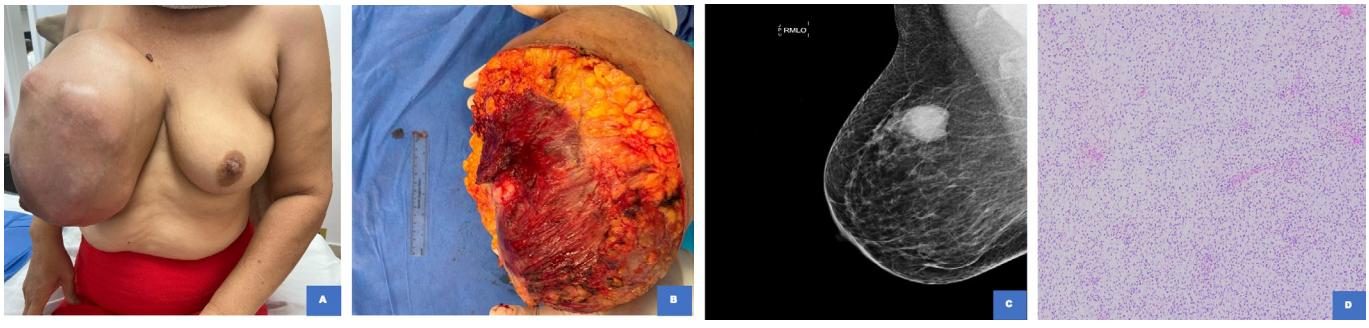
Background: Filodes tumor is an infrequent neoplasm with fibroepithelial characteristics that represent less than 1% of the total of all breast cancers (1). It has three histological grades: benign, borderline and malignant (2). In case of clinical suspicion it is necessary to perform an excisional biopsy or resection of the tumor with wide surgical margins of at least 1 cm to avoid recurrences (3). Their histological similarities with fibroadenomas, especially in core needle biopsy, in addition to their unpredictable biological behavior make their diagnosis and treatment controversial (1,4,5). The purpose of this study is to analyze the diagnostic technique of breast phyllodes tumors, as well as the associated adjuvant and surgical management.

Methods: The study, retrospective, observational, descriptive-analytical type, explored 9000 clinical records from January 2015 to October 2022 in a specialized oncology center in Ecuador, looking for patients with Phyllodes Tumor. Three ICD10 codes were used: D24X (benign tumor of the breast), D486 (tumor of uncertain or unknown behavior of the breast), C509 (malignant tumor of the breast, unspecified part). In 101 patients included, with diagnosis confirmed by surgical specimen biopsy (those without surgical treatment were excluded), the following variables were evaluated: age, tumor size, histologic grade, history of fibroadenoma, adjuvant therapy and breast surgery. Eighty-two patients operated at least 3 years ago were used to analyze local recurrence and 32 patients with tumor-free margins were used to evaluate resection margins. Fisher's exact test was applied to compare categorical variables, with a 95% confidence interval and a significance threshold of $p<0.05$.

Results: In the study of 101 patients with phyllodes tumor, the average age was 42 years and the average tumor size was 11 cm. Sixty-two percent were found to be benign, 23% borderline and 15% malignant. In addition, 46% had a previous diagnosis of fibroadenoma. Treatments included excisional biopsies in 44%, conservative surgeries in 31% and mastectomies in 25%. Six percent received radiotherapy, mainly in malignant cases, with one borderline exception. Local recurrences were 13% (11 patients) in a follow-up of at least three years (82 patients), with a mean of 22 months disease-free. Fifty-five percent of recurrences occurred in benign tumors, 18% in borderline and 27% in malignant. In 32 patients with tumor-free surgical margins, 5 experienced recurrence, all with margins less than 1 cm

Figure 1.

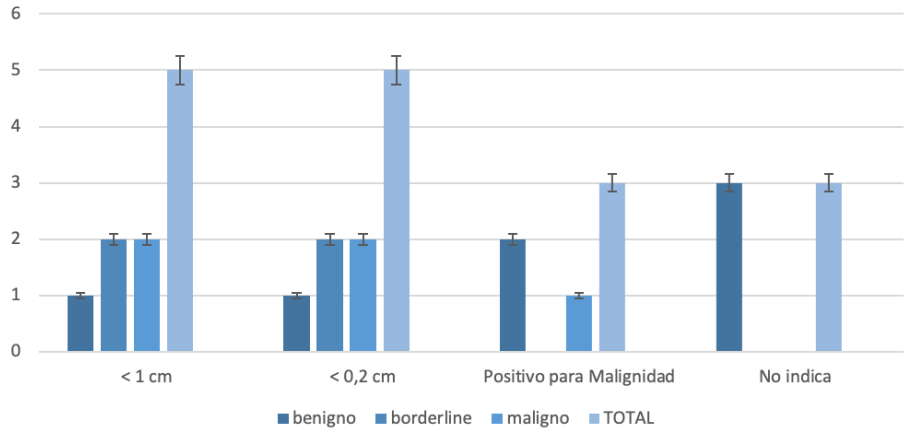


A: Clinical presentation of large phyllodes tumor; **B:** Surgical specimen (27 cm) of phyllodes tumor after mastectomy; **C:** Mammography of benign phyllodes tumor. Cephalo-caudal projection of right breast. Radiopaque asymmetric asymmetric liposustituted radiopaque radiological pattern with poorly demarcated multi lobulated contours, no areas of destructuring, parenchymal or clustered microcalcifications. BI-RADS 4; **D:** Histologic plaque. There is evidence of increased cellularity, stromal overgrowth (Image 20X). Sample compatible with borderline phyllodes tumor.

Table 1.- Clinical, diagnostic and surgical characteristics.

	Benigno		Borderline		Maligno		Total (n)	%
	(n)	(%)	(n)	(%)	(n)	(%)		
Características Clínicas								
Edad < 40 años	30	77	8	20	1	3	39	39
Edad > 40 años	33	53	15	24	14	23	62	61
Tamaño <5cm	34	85	6	15	0	0	40	40
Tamaño >5cm	29	47	17	28	15	25	61	60
Grado Histológico	63	62	23	23	15	15	101	100
Características Diagnósticas								
Diagnostico presuntivo inicial fibroadenoma	28	61	15	33	3	6	46	46
Diagnostico presuntivo inicial Tumor Filodes	35	63	8	15	12	22	55	54
Características Terapéuticas Quirúrgicas								
Biopsia Excisional	40	93	3	7	0	0	43	42
Cuadrantectomía	20	59	13	38	1	3	34	34
Mastectomía	3	13	7	29	14	58	24	24
Ausencia de Recurrencia Local en Relación con Márgenes Quirúrgicos								
Márgenes libres	14	44	8	25	10	31	32	45
En contacto	14	74	5	26	0	0	19	27
No indica	18	90	2	10	0	0	20	28
Total	46	65	15	21	10	14	71	100

Graph 1: Presence of local recurrence at a minimum follow-up of 3 years.



(distances less than 0.2 cm). The risk estimate for this cohort of recurrence was 0.6875 (95% CI 0.494-0.957), with a p value of 0.043.

Conclusions: The diagnosis and treatment of phyllodes tumor pose challenges due to its similarities to fibroadenomas and its unpredictable biological behavior. Previous diagnoses of fibroadenoma, present in about half of the cases, complicate its identification. Despite their mostly benign tendency, their large size requires extensive surgery. The need for adjuvant therapies is limited, highlighting the importance of personalized approaches. The significant association between surgical margins smaller than 0.2 cm and local recurrence demonstrates the importance of adequate margins. Despite these findings, further prospective studies are required to validate these results and guide future therapeutic decisions.

ONCOLOGÍA

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ESTIMATION OF ENERGY EXPENDITURE BY INDIRECT CALORIMETRY COMPARED WITH PREDICTIVE EQUATIONS IN CRITICAL ONCOLOGY PATIENTS

ESTIMACIÓN DEL GASTO ENERGÉTICO POR CALORIMETRÍA INDIRECTA COMPARADA CON ECUACIONES PREDICTIVAS EN PACIENTES CRITICO-ONCOLÓGICOS

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Background: It is estimated that 22% of hospitalized patients present malnutrition and it is more prevalent in oncologic patients, in Uci Solca Guayaquil it is present in about 30% of patients. Optimal nutritional therapy requires an energy supply as close as possible to the real energy expenditure and indirect calorimetry is the standard technique to measure it.

Methods: A retrospective retrospective cross-sectional descriptive observational study was carried out in 19 critical oncologic patients admitted to the intensive care unit SOLCA Guayaquil where the formulas for prediction of resting energy expenditure (REE) and determination by indirect calorimetry (IC) were applied. Calorimetric measurement was performed using COSMED ® Q-NRG+ equipment. It was used in ventilated and non-ventilated patients according to the equipment protocols.

Results: The mean estimated energy consumption by measured IC was 1661.58 ± 392.79 kcal, while inferred by Harris Benedict formula was 1406.88 ± 318.36 kcal and by rule of thumb 2028.47 ± 535.63 kcal.

Conclusions: Recent data confirm a poor or overestimated correlation between energy expenditure measured by indirect calorimetry and energy expenditure predicted by equations, emphasizing the need for indirect calorimetry to be the standard of care.

Figure 1: Caloric requirements per IC, thumb method, Harris Benedict

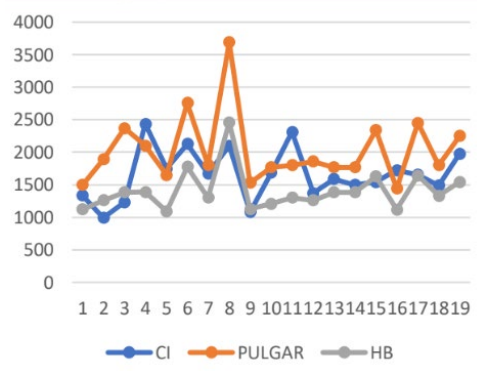

Table 1: Average caloric intake by indirect calorimetry, Harris Benedict and Rule of Thumb

Evaluación calorimétrica	Media (kcal totales)
Calorimetría indirecta	1661,58 ± 392,79
Harris Benedict	1406,88 ± 318,36
Regla del pulgar	2028,47 ± 535,63

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CLINICAL AND EPIDEMIOLOGICAL CHARACTERIZATION OF CERVICAL CANCER AT SOLCA - GUAYAQUIL

CARACTERIZACIÓN CLÍNICA Y EPIDEMIOLÓGICA DEL CÁNCER DE CÉRVIX EN SOLCA - GUAYAQUIL

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Background: Cervical cancer (CC) is the fourth most frequent cancer (ca) and the fourth cause of death from ca in women worldwide. In Ecuador, it is the second most frequent ca and the fourth cause of death from ca. The present study aims to know the clinical and epidemiological characteristics according to age, histopathology and clinical stage of patients with CC between 2010-2014.

Methods: It is an observational, descriptive, retrospective and longitudinal study. The SPSSv21 statistical program was used. Descriptive statistics, frequency and percentage were used for the interpretation of qualitative variables; and measures of central tendency, dispersion and distribution were used for quantitative variables.

Results: 1909 clinical histories of patients with CC were reviewed during the study period, 211 were excluded for not meeting eligibility criteria, counting 1698 to be evaluated. Regarding the stages (I-II-III-IV) the most frequent was stage II (A-B) 54.2%, of these, squamous cell carcinoma (44.6%) and adenocarcinoma (9.6%). The 32.2% corresponded to resectable cancers (IA-IIA) and 67.8% to unresectable cancers. The mean age was 55 years(a), median 54a and mode 45a.

Conclusions: In the present study, the most frequent age range was 40-49a (23.7%), the most frequent histopathologic type was squamous cell carcinoma (82%) and the most frequent clinical stage was IIB (36%).

Figure 1: Percentage of patients with cervical cancer by age group.

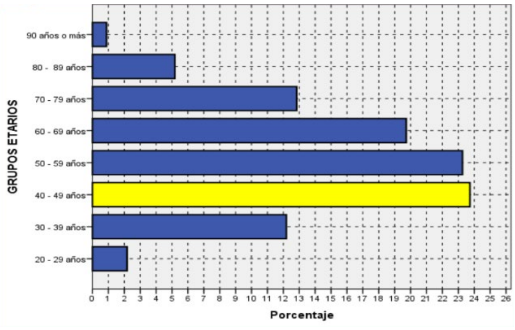

Table 1: Initial clinical stage according to histopathological diagnosis of patients with cervical cancer.

			ESTADIO INICIAL										Total
			I-A	I-B	I-C	II-A	II-B	III-A	III-B	III-C	IV-A	IV-B	
DIAGNOSTICO	Ca Escamocelular	Recuento	46	215	12	146	611	134	147	27	40	15	1393
		% del total	2,7%	12,7%	0,7%	8,6%	36,0%	7,9%	8,7%	1,6%	2,4%	0,9%	82,0%
	Adenocarcinoma	Recuento	10	62	1	53	110	21	26	7	6	6	302
		% del total	0,6%	3,7%	0,1%	3,1%	6,5%	1,2%	1,5%	0,4%	0,4%	0,4%	17,8%
	Otros	Recuento	2	0	0	0	1	0	0	0	0	0	3
		% del total	0,1%	0,0%	0,0%	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2%
Total		Recuento	58	277	13	199	722	155	173	34	46	21	1698
		% del total	3,4%	16,3%	0,8%	11,7%	42,5%	9,1%	10,2%	2,0%	2,7%	1,2%	100,0%

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USE OF BOTULINUM TOXIN IN PATIENTS WITH BREAST CANCER AND POST SURGERY PAIN SYNDROME

USO DE TOXINA BOTULÍNICA EN PACIENTES CON CANCER DE MAMA Y SINDROME DOLOROSO POSTOPERATORIO

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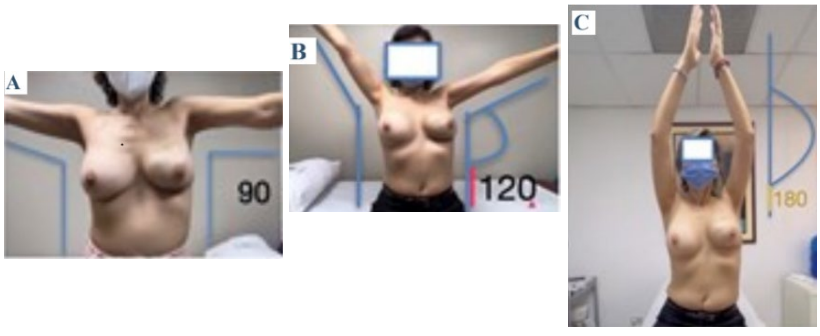
Background: Nowadays it is known how to treat breast cancer. However, postoperative recovery in many cases is different from patient to patient due to patient-specific factors, the surgical technique used and the adjuvant treatments that the patient must necessarily receive. Radiotherapy perpetuates and increases the inflammatory period and translates into pain due to muscle contracture causing functional impotence in the ipsilateral limb; this is known as Post Breast Surgery Pain Syndrome. We propose the application of Botulinum Toxin, because its effect counteracts the contracture in specific points, and at low doses increases the proliferation of endothelial cells promoting neovascularity.

Methods: Experimental, prospective, cross-sectional study from 1/05/21 to 30/04/22 included patients with breast cancer already operated and with moderate or severe painful syndrome, with functional limitation or signs of irreversible skin damage. Patients who did not present at least 2 of the symptoms of the syndrome or who did not accept the procedure were excluded. Botulinum toxin A, 50 IU intramuscular was used in trigger points and in subdermis in patients with skin damage. Measuring range of pain, degree of arm mobility and muscle contracture at 15 days, 1 and 3 months.

Results: Universe of 22 post-surgical breast cancer patients aged between 31 and 62 years, 14 of whom received radiotherapy as adjuvant treatment, all with moderate or severe symptoms: functional limitation and pain. After the application of the toxin, in 10 patients the limitation, pain and contracture disappeared, obtaining an arc of rotation of 180°, while 11 patients went on to mild symptoms with an arc of rotation of 120°.

Conclusions: Postoperative pain syndrome affects the quality of life of patients in remission. Botulinum toxin has more uses than just esthetic. Its efficacy has been proven by various groups in other pathologies and in this PPS it should continue to be investigated, although good results have already been obtained.

Figure 1.



A: Left pectoral TB pre-application; **B:** 1 month post application TB improvement with abduction at 120 degrees; **C:** Patient 3 months after TB application

Graph and Table 1: Signs and Symptoms After Botulinum Toxin Application

Signos y síntomas Post Aplicación de Toxina Botulínica	AUSENCIA	LEVE	MODERADO	SEVERO
Limitación Funcional	10	11	1	
Dolor	10	5	7	
Contractura Capsular	8	4	8	2
Contractura Muscular	10	5	7	

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TUMORS OF THE CENTRAL NERVOUS SYSTEM: CHARACTERIZATION OF MORTALITY IN PEDIATRIC POPULATION. ECUADOR. 2018-2022

TUMORES DEL SISTEMA NERVIOSO CENTRAL: CARACTERIZACIÓN DE LA MORTALIDAD EN POBLACIÓN PEDIÁTRICA. ECUADOR. 2018-2022

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Background: From a public health point of view, pediatric cancer arises when considering in terms of years of life potentially lost, since each time it is cured, it represents a greater survival and a longer life expectancy, among which are malignant tumors of the central nervous system (CNS), being common at early ages and constituting the first cause of death in children; there are few studies that show the reality in the Ecuadorian population. Being its objective to characterize epidemiologically the CNS malignant tumors of the pediatric population in Ecuador, period 2018-2022.

Methods: An observational, descriptive study was conducted; its universe and sample were the deceased with a diagnosis of CNS malignant tumor in Ecuador, between 2018 and 2022. The information was taken from the National Institute of Statistics and Census of Ecuador, INEC, according to the online open data bank of deaths, taking the data of sex, age, type of tumor and by year, considering the pediatric age from 0 to 19 years, where descriptive statistics were applied. Its management was based on ethical and legal principles.

Results: Of the 295 deaths due to CNS malignant tumors, 34.9% occurred mostly in the province of Guayas, followed by Pichincha 27.8% and Manabí 6.7%. Azuay, 6.3%, among others (Figure 1). According to topographic location, the most frequent was brain tumor with 83%, followed by tumor of the eye and its annexes with 13%; according to sex, 58% were men and 42% were women; the age group most affected was 0 - 4 years in males with 18% and females in the 5 - 9 years age group with 13% (Table 1).

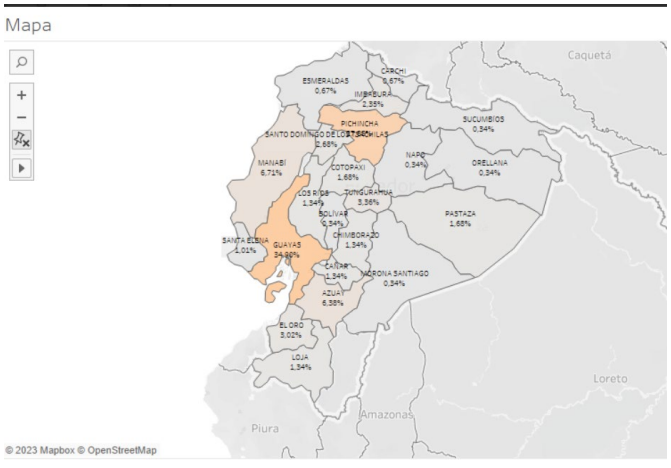

Table 1.

Topografia		Tumor maligno del ojo y sus anexos		Tumor maligno de las meninges		Tumor maligno del encéfalo		Tumor maligno de la médula espinal, nervios craneales y de otras partes del SNC		Total fallecidos	
Sex	Grupo etario	No.	%	No.	%	No.	%	No.	%	No.	%
Hombre	G 0-4	15	41%	0	0%	37	15%	2	22%	54	18%
	G 5-9	3	8%	0	0%	46	19%	1	11%	50	17%
	G 10-14	2	5%	0	0%	36	15%	1	11%	39	13%
	G 15-19	0	0%	1	33%	27	11%	0	0%	28	9%
	SubTotal	**20**	**54%**	**1**	**33%**	**146**	**59%**	**4**	**44%**	**171**	**58%**
Mujer	G 0-4	14	38%	0	0%	19	8%	1	11%	34	12%
	G 5-9	2	5%	1	33%	34	14%	2	22%	39	13%
	G 10-14	1	3%	1	33%	26	11%	1	11%	29	10%
	G 15-19	0	0%	0	0%	21	9%	1	11%	22	7%
	SubTotal	**17**	**46%**	**2**	**67%**	**100**	**41%**	**5**	**56%**	**124**	**42%**
	Total	**37**	**100%**	**3**	**100%**	**246**	**100%**	**9**	**100%**	**295**	**100%**
	% topografia	**13%**		**1%**		**83%**		**3%**			

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MALIGNANT TUMORS: CHARACTERIZATION OF INCIDENCE IN ADULTS AT SOLCA GUAYAQUIL. 2018-2022

TUMORES MALIGNOS: CARACTERIZACIÓN DE LA INCIDENCIA EN ADULTOS SOLCA GUAYAQUIL. 2018-2022

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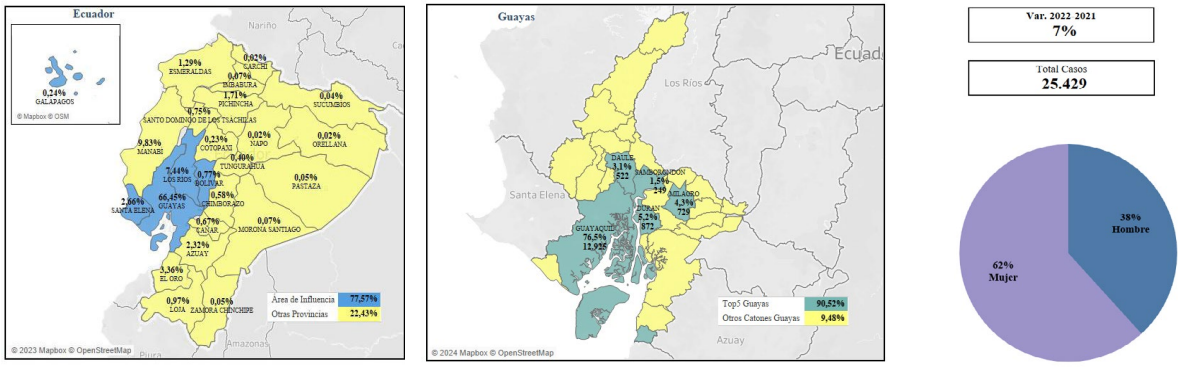
Background: In recent decades, the incidence of malignant tumors in the adult population has increased significantly worldwide, becoming one of the main causes of morbidity and mortality. Scientific and technological advances have allowed a better understanding of their biology and causes; they derive from multiple factors, such as genetic, environmental and lifestyle factors. Consequently, the objective is to epidemiologically characterize malignant tumors in adults of SOLCA Guayaquil patients in the period 2018-2022.

Methods: The observational study analyzes the total incidence cases of malignant tumors in ages older than 19 years of SOLCA Guayaquil patients, between the years 2018 and 2022. Demographic variables are used: sex, age group, province and canton of residence. A descriptive and multivariate statistical analysis was performed with HJ-Biplot.

Results: 25,429 cases of malignant tumors were diagnosed in SOLCA Guayaquil during the study period, with a 7% increase compared to the last two years. The most frequent topographic group was breast (17.6%), followed by digestive organs (15%) and female genitalia (12.6%), among others. The area of influence of SOLCA Guayaquil is shown (77.57%), with Guayas 66.45%, Los Rios 7.44%, Santa Elena 2.66%, Bolivar 0.77% and Galapagos 0.24% (Figure 1); according to sex, 62% were more in women; The age groups most affected are 60-79 years in men with 51% and women 50-69 years with 46%; in addition, there is a relationship of homogeneous groups of cancers in women and heterogeneous in both sexes in different age groups and according to their incidence (Figure 2).

Conclusions: In the five-year period studied, the most representative groups of malignant tumors in adults were breast and digestive organs, with more women in the age groups 50 - 69 years; identifying three clusters with homogeneous behavior patterns associated with the groups of malignant tumors, sex and age group, which allows directing the efforts of timely response against this problem.

Map 1: Percentage distribution of malignant tumors in adults (Solva Guayaquil). Period 2018-2022



	G 20-29	G 30-39	G 40-49	G 50-59	G 60-69	G 70-79	G 80 +	Grand total
Male	485	677	873	1.518	2.574	2.424	1.180	9.731
	5%	7%	9%	16%	26%	25%	12%	100%
Female	650	1.758	2.984	3.722	3.467	2.191	926	15.698
	4%	11%	19%	24%	22%	14%	6%	100%
Grand total	1.135	2.435	3.857	5.240	6.041	4.615	2.106	25.429
	4%	10%	15%	21%	24%	18%	8%	100%

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NON-MASS LESIONS: ULTRASONOGRAPHIC FINDINGS AND MOLECULAR CLASSIFICATION

LESIONES NO MASA: HALLAZGOS ULTRASONOGRÁFICOS Y CLASIFICACIÓN MOLECULAR

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Background: Non-mass lesions are characterized by hypoechogenicity and poorly defined borders. They can be benign or malignant, with an incidence of 5%. Ultrasound findings are distortion of the architecture, acoustic shadowing and calcifications. The most common histological subtypes are HER2 + and Luminal in infiltrative carcinomas, being important for the treatment of breast cancer.

Methods: Study conducted in the first semester of 2023, with patients who had non-mass lesions in breast ultrasound. Echo-guided biopsies were performed, obtaining an average of 6 samples. Pathological analysis categorized the samples as benign or malignant, using immunohistochemistry in malignant cases. Data processed in Excel and SPSS.

Results: With 547 breast biopsies in 6 months, 53 nonmass lesions were detected, being 9 % of the total. 28 were infiltrating carcinoma, 2 in situ cancer, 1 mucinous carcinoma and 22 benign. The ultrasound findings associated with malignancy were: vascularization 14, acoustic shadow 9, calcifications 8, edema 8 and distortion 4. The molecular subtypes of the malignancies were analyzed, highlighting Luminal B with 13, HER2+ 6, triple negative 4, Luminal B HER2+ 3 and Luminal A 2. No significant statistical correlation (p 0.15) was found between these variables.

Conclusions: The usefulness of ultrasound in the diagnosis of breast cancer is highlighted by detecting it in 58.4%, therefore, non-mass lesions should be biopsied. The main finding in malignant lesions was vascularization, while benign lesions did not have frequent calcifications. Relationships between ultrasound findings and molecular subtypes were observed. The study has limitations, such as its oncologic setting, but it highlights the importance of knowledge of non-mass lesions in the treatment and prognosis of breast cancer.

Figure 1: Analysis of studies in molecular subtypes

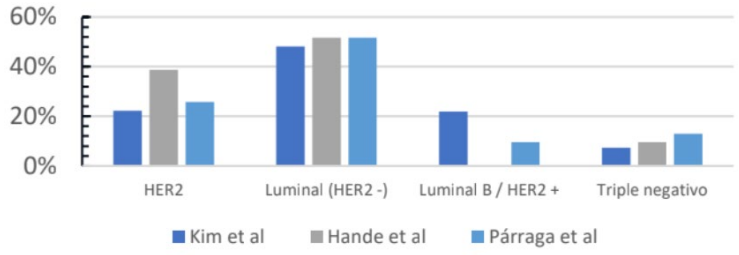

Table 1: Association of ultrasonographic findings and molecular subtypes

Hallazgos ultrasonográficos	HER2+	LUMINAL A	LUMINAL B	LUMINAL B HER2+	TRIPLE NEGATIVO	∑
Vascularización	1	2	9	1	1	14
Sombra acústica	6		1	1	1	9
Edema	2		2	1	3	8
Distorsión	1		2		1	4
Calcificaciones	2	1	3	2		8
∑ *(p 0.15)*	**12**	**3**	**17**	**5**	**6**	**43**

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INCIDENCE AND MORTALITY OF CARDIAC DYSFUNCTION IN ONCOLOGY PATIENTS IN SEPTIC SHOCK

INCIDENCIA Y MORTALIDAD DE LA DISFUNCIÓN CARDÍACA EN PACIENTES ONCOLÓGICOS CON CHOQUE SÉPTICO

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Background: Septic shock is a serious complication that persists as a significant cause of morbidity and mortality in intensive care units globally. Patients with solid and hematological tumors, due to their inherent immunosuppression and the complexity of the combination of cancer and septic shock, represent a high-risk group in whom cardiac dysfunction is part of the complications, the same entity that has not been sufficiently studied in oncologic patients.

Methods: A retrospective, single-center, longitudinal study was conducted in the oncological intensive care area of the SOLCA Guayaquil Hospital from April 2022 to June 2023 with a population of 130 patients diagnosed with septic shock. Data were collected from medical records and inotropic requirement was used as a determinant of cardiac dysfunction. Subsequently, incidence and mortality in patients with solid versus hematologic tumors were evaluated.

Results: With the data obtained, 13.8% of the general population with an admission diagnosis of septic shock had cardiac dysfunction; of these, 14.6% and 9.7% were patients with solid and hematological tumors, respectively, with mortality in solid tumors of 84% and in hematological tumors of 50%.

Conclusions: This study demonstrates that the incidence of cardiac dysfunction in septic shock is similar to the general population, highlighting that for both types of tumors mortality is high when dysfunction is present, which motivates further research, trying to specify risk factors, prevention and support.

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CLINICAL AND IMMUNOHISTOPATHOLOGICAL CHARACTERISTICS OF BREAST CANCER IN WOMEN BELOW THE AGE OF 40

ASPECTOS CLÍNICOS E INMUNOHISTOPATOLÓGICOS DEL CÁNCER DE MAMA EN PACIENTES MENORES DE 40 AÑOS

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Background: Breast cancer can occur at any age. Seven percent of breast cancer cases occur in people under 40 years of age, and in women this condition accounts for 40% of all cancers (1,2). The most recent SEER Cancer Statistics Review indicates that at 40 this increases to 1.55% (1 in 65 women) (4). Breast cancer occurring at younger ages represents a challenge in terms of prevention, early detection, diagnosis and treatment (5) This study seeks to provide a guideline to the medical community about breast cancer cases in Ecuador in this age group.

Methods: A retrospective, observational, cross-sectional, descriptive, descriptive study explored 500 medical records in a period of time from January 2020 to January 2022 in the specialized oncology center in Ecuador (SOLCA). The ICD10 code C509 (malignant tumor of the breast, unspecified part) was used. Patients under 40 years of age at the time of diagnosis were included. Cases without pathology findings were excluded.

Results: Demographic and clinical aspects were studied in 100 patients within the age range, 80% were older and 20% younger than 30 years. The average number of children in patients with breast cancer was 2 children (57%) and the use of hormonal contraceptives was 42%. Immunohistopathological aspects were analyzed in 132 patients. Ninety-one percent were classified as infiltrating ductal carcinoma, 5% as ductal carcinoma in situ, 1% as infiltrating lobular carcinoma and the remaining 1% as mixed invasive carcinoma.

Conclusions: Infiltrating ductal carcinoma is the histological type of breast cancer that predominates in women under 40 years of age; half of the cases would have a therapeutic option available for adjuvant therapy as they are progestin receptor positive. The number of children and the use of contraceptives should be taken into account as predisposing factors for breast cancer.

1% lobular carcinoma in situ, 1% infiltrating lobular carcinoma and the remaining 1% mixed invasive carcinoma.

Figure 1: Proportion of Patients by Medical History

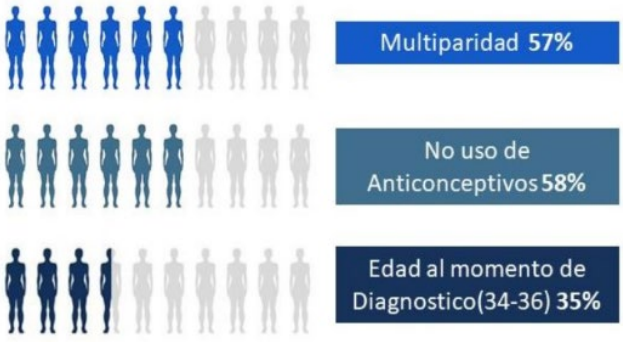

Table 1: Clinical and immunohistopathological features

Características	Número	Porcentaje
Edad (años)		
Mayor a 30	80	80%
Menor a 30	20	20%
Uso previo de anticonceptivos		
Sí	42	42%
No	58	58%
Más de 2 hijos		
Sí	57	57%
No	43	43%
Inmunohistopatología		
Carcinoma ductal infiltrante	120	90.23%
Otro tipo histológico	12	9.77%
Receptores de estrógenos positivos	63	47.72%
Receptores de progestágenos positivos	67	50.75%
HER2 NEU positivo	39	29.55%
Triples positivos	20	15.15%
Triples negativos	36	27.27%
Luminal A	15	11.36%
Luminal B	117	88.64%

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PSEUDOMYXOMA PERITONEI: CLINICAL IMPLICATIONS OF IMAGING FINDINGS

PSEUDOMIXOMA PERITONEAL: IMPLICACIONES CLÍNICAS DE LOS HALLAZGOS IMAGENOLÓGICOS

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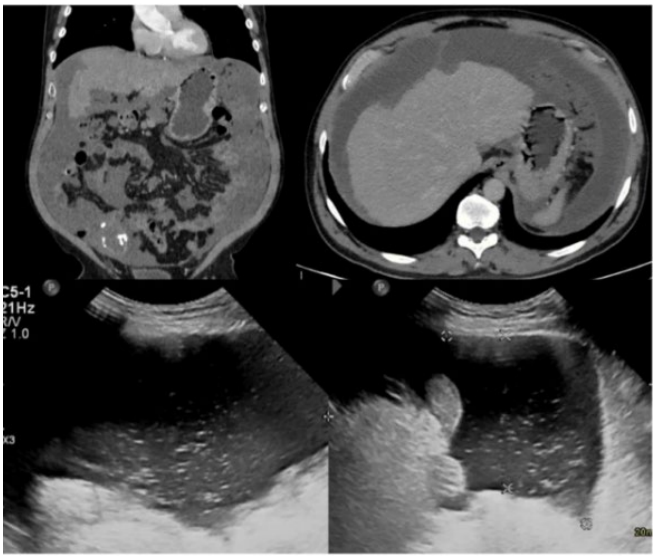
Background: Pseudomyxoma peritonei (PMP) is a rare benign disease characterized by the presence of multiple mucinous implants in the peritoneal cavity. Of unknown etiology, it is considered to be related to endometriosis or obstruction of Meissner's ducts. More frequent in women of reproductive age. Benign in nature; usually, it may cause complications such as intestinal obstruction or peritonitis. Treatment is usually surgical, with removal of the tumor lesions.

Methods: Observational, descriptive, retrospective study of patients diagnosed with PMP. Medical records and radiology reports were reviewed for presence of tumor/cystic lesions, thick septa, complications or disease recurrence.

- Inclusion criteria: -Diagnosis of PMP confirmed by histopathology. - Age ≥ 18 years.
- Exclusion criteria: Diagnosis of other malignant peritoneal disease.

Results: Eighteen patients were included in the study. Of these, 10 had tumor/cystic lesions, 1 with thick septa or mobile echoes. One group had a postoperative complication risk of 11.1% ($p < 0.05$). In addition, there was a 100% non-recurrence rate in the study population, with a mortality rate of 94.4% over a 3-year period.

Conclusions: Patients with PMP present tumor/cystic lesion more frequently. Thick septa, in addition to being at risk of postoperative complications. The presence of thick septa or cystic masses is a finding that should be carefully considered, as it may indicate a risk of disease progression. It is important that patients with these findings receive follow-up after surgery by a multidisciplinary team, due to the high mortality rate in a short period of time during the study (3 years).



		N	%
Sexo	F	11	61,1%
	M	7	38,9%
Diagnóstico Patología	NO	11	61,1%
	SI	7	38,9%
Cirugía previa	NO	10	55,6%
	SI	8	44,4%
Lesión tumoral / quística	NO	8	44,4%
	SI	10	55,6%
Septos gruesos / Ecos	NO	17	94,4%
móviles	SI	1	5,6%
Complicaciones	NO	16	88,9%
postoperatorias	SI	2	11,1%
Recurrencia	NO	18	100,0%
Mortalidad en 3 años	FALLECIDO	16	88,9%
	VIVO	2	11,1%

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SURVIVAL IN PATIENTS WITH CERVICAL CANCER SUBJECTED TO CHEMOTHERAPY-RADIOTHERAPY IN SOLCA-GUAYAQUIL

SUPERVIVENCIA EN PACIENTES CON CÁNCER DE CÉRVIX SOMETIDOS A QUIMIO-RADIOTERAPIA EN SOLCA-GUAYAQUIL

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Background: Cervical cancer (cc), being a pathology of high incidence in Ecuador, requires a priority multidisciplinary therapeutic approach to obtain optimal benefit in overall survival. The aim of the present study is to describe overall survival (OS) in patients with locally advanced cc treated with chemoradiation, according to histological type and clinical stage.

Methods: This is an observational, analytical, retrospective, retrospective, longitudinal study of patients with stage IIB-IVA CC who received treatment with chemoradiation therapy during the period from January 2010 to December 2014 with 10-year follow-up. The SPSSv29 statistical system was used. Survival analysis was performed using Kaplan Meier method and Log-Rank test.

Results: Of a total of 1909 patients, 1581 were excluded because they did not meet the eligibility criteria. The overall survival rate was 43%. According to histological type: 276 patients presented squamous cell carcinoma (SCC) and 52 adenocarcinoma (ADC); presenting a survival of 44% for SCC and 35% for ADC. The calculation by clinical stage, II-B, shows a survival of 46%. For stage IV.

A of 20% up to 46 months (graph 1). The Log-Rank test (p0.04) shows a significant statistical value with benefit for stage II-B. (See table 1).

Conclusions: Overall survival at 10 years was 43%, showing a significant difference for histological type, being higher for squamous cell carcinoma, and also showing a significant difference between stages.

Graph 1.

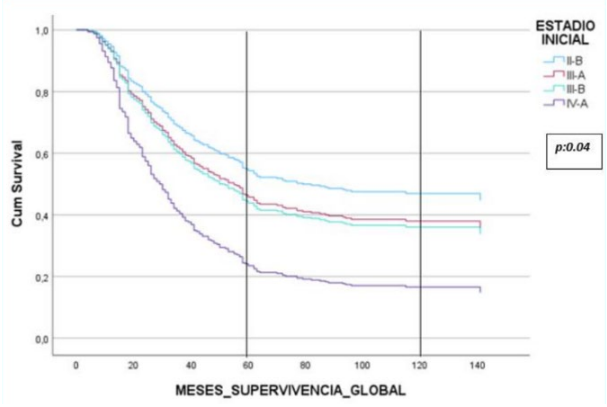

Table 1.

VARIABLE	Total. Pctes	N° evento	SG 5 años	SG 10 años
Supervivencia	328	184	50%	43%
Adenocarcinoma	52	31	49%	35%
Carcinoma Escamocelular	276	153	50%	44%
Total	328			
II-B	230	122	54%	46%
III-A	53	32	42%	39% (93 meses)
III-B	30	18	41%	40% (77 meses)
IV-A	15	12	20% (46 meses)	
Total	328			