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Research Article

Some Specificity Around Mediastinal Tumours

Ibrahima Kalil Keita[1]*, Ana María Nazario Dolz[2] and Yemelin Riveron Alvarez[3]

[1]Specialist in General Surgery, Specialist in Family and Community Medicine, Ecuador

[2]First and Second Degree Specialist in General Surgery, Master in Medical Emergencies, Assistant Professor and Researcher, Ecuador

[3]General Practitioner, General Surgery Resident, Ecuador

***Corresponding Author:** Ibrahima Kalil Keita, Specialist in General Surgery, Specialist in Family and Community Medicine, Ecuador.

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Abstract

Introduction: The development of imaging enabled the topographic diagnosis of mediastinal tumors; however, even with the current advances in surgery, anesthesiology and resuscitation, surgical access to this middle space of the rib cage has been the great problem faced by thoracic surgeons.

Objective: To deepen in the different updated cognitive aspects about mediastinal tumors.

Methods: Digital documentary search in databases: Schiele, Lilacs, Web of Science, PubMed, carried out in January of this year, of publications of the present century.

Results: Mediastinal neoplasm's are infrequent, they can occur at any age, usually between the third and fifth decades and most are discovered incidentally at routine chest radiography in asymptomatic patients. Malignant mediastinal tumours are rare, but benign tumours are a diagnostic challenge for radiologists and pathologists. In malignant neoplasm a wide range of histological varieties is identified, attributable to the characteristics of the affected organ.

Conclusion: The definitive diagnosis is usually established by post-surgical histopathological study, with the exception of lymphomas and syringomatous germ cell tumours and some metastatic tumours, although computed tomography associated or not with percutaneous biopsy is the gold standard for preoperative diagnosis. The selection of the entry route to the thorax, as well as the surgical procedure both endoscopic and conventional is conditioned by the location and size of the tumour in the mediastinum.

Keywords: Mediastinum; Mediastinal Compartments; Mediastinal Tumours; Diagnosis; Treatment; Sternotomy; Endoscopy

Introduction

The mediastinum develops from the endoderm, mesoderm and ectoderm, from the fourth week of gestation and in the seventh the pneumopericardium membrane fuses with the ventral mesoderm of the esophagus, whose subsequent evolution determines the complete mediastinal development, which is the extra pleural central compartment of the thorax that separates the two pleural cavities, the sternum in front, the posterior spine and the diaphragm below; it houses multiple anatomical structures, so that in this space various diseases can occur, among which are tumors [1,2].

Likewise, the mediastinum has particular embryological, physiological and anatomical characteristics, since blood, lymph, air and ingested food pass through it; It is also the area where the autonomic nerves have the greatest activity. At this level the embryological development of the circulatory, respiratory and digestive systems occurs, which is why it constitutes a seat of congenital malformations of various kinds, which, together with inflammatory, traumatic and neoplastic processes, make it a very complex compartment where a wide variety of diseases [3-5].

Complications of mediastinal tumors stem from a lack of space in the face of the growth of these formations and, therefore, from the compression of neighboring structures such as the spinal cord, vascular structures and esophagus, among others, in addition to the dissemination to surrounding structures such as the heart and large vessels, as well as complications arising from surgery, radio and chemotherapy [5-7].

Given its anatomical situation, the mediastina remained for centuries as an uncharted territory, but with the advent of radiology mediastinal tumors began to be diagnosed; however, for a long time there was the fence of his operative inaccessibility. Surgical access to that medium chest box space has always been the big problem chest surgeons have faced [7-9].

Taking into account these premises and the increase in the number of patients operated with malignant mediastinal tumors in our environment [10-12] it was decided to carry out a bibliographic review with the aim of deepening their different aspects updated cognitive syllabics on this important topic.

Methods

Through the digital documentary search technique in different databases: Schiele, Lilacs, Web of Science, PubMed, carried out in January of this year, publications of this century were located on this topic, with the use of the words mediastinal, mediastinal compartments, mediastinal tumors, diagnosis, treatment, sternotomy.

Some historical aspects

Since 1787, the dictionary of sciences and arts has recorded a definition of "mediastinal space" and another curious meaning, where it is detailed as a fold of the pleura, which divides the chest into two halves and comes from the back [1,13].

Few surgeons, in the late 1800s and early 1900s, attempted to describe surgical approaches to mediastina [5,13].

In 1888, Nassil off demonstrated that the esophagus could be reached by subsequent access, taking as a reference the treatment used in patients with perforation. Years later, other surgeons began to approach anterior mediastina abnormalities. In 1893, Bettinelli described the removal of an earlier mediastinal dermoid cyst and performed a resection of the sternal handlebars. In 1896, Ludwig Rehn of Frankfort used transcervical surgical access [1,14].

Already in 1897, Milton wrote extensively about mediastinal surgery by using the advantages of middle sternotomy and found that it gave him excellent access to that location. The previous mediastinotomies were described by that author in England and by Ricard in France, who dedicated publications dated 1901 [5,14].

The first operation of myasthenia gravis was performed by Sauer Bruch on March 6, 1911. Through a transcervical access, he operated on a 19-year-old woman suffering from this condition and coexisting goiter. He extracted a tumor of 49 g of hyperplastic thymus and observed subsequent improvement of the clinical picture. In the next 20 years there were intermittent reports of surgeons who performed this intervention with good response in terms of symptomatic improvement [1,15].

The modern era of thymic surgery began with Alfred Blalock at John's Hopkins Hospital in 1936, who through a transsternal route removed a thymic tumor in a patient with myasthenia gravis and suggested that exploration of the thymic region would be indicated in all Myasthenia patients. A few years later, in 1941, he applied this theory introduced tylectomy in cases of myasthenic patients without thymoma, with similar improvements. In 1944 he communicated his series of 20 patients and thus began to apply a new therapeutic option to combat myasthenia; But already in 1940 Heuer, who had published a monograph on mediastinal tumors, also described the successful elimination of neurogenic tumors from the posterior mediastinum and the characteristics of several types of thymic tumors [15,16].

In 1959, Carlen's performed transcervical mediastinoscopy, using the mediastinoscopy created by him. Much later Joel Cooper, in 1988, developed the sternal handlebar retractor, which allows a better visualization of the anterior mediastinum and exposure of the gland, which makes possible a complete thymic resection from the neck; modification that repolarized transcervical access. The use of a videoscope helps improve vision and anatomical dissection [17-19].

Anatomical and physiological details of the mediastinum

There are different classifications that divide the mediastinum into different compartments, based on topographic or surgical anatomy and radiology. According to Shields and Felson, a previous, a middle and a later compartment are distinguished. Dr. José L. Martínez proposed the division of the mediastinum into 9 compartments: perivisceral: upper middle and lower; visceral: upper, middle and lower and retrovisceral: upper, middle and lower [1,5].

Currently, the most used is the classification that divides it into upper and lower mediastinum and this in turn into anterior, middle and posterior.

Upper mediastinum

It extends from the upper thoracic opening to the horizontal plane that passes through the sternal angle and the lower edge of the IV thoracic vertebra. It contains, from front to back, the following structures: origin of the sternohyoid and sternothyroid muscles, thymus and its remains, brachiocephalic veins, upper half of the superior vena cava, aortic arch, brachiocephalic arterial trunk, left common carotid artery, left subclavian artery, phrenic nerves, vagus nerves, left or recurrent left laryngeal nerve, trachea, esophagus, thoracic duct, termination of long neck muscles, areolar and fatty tissue.

Lower mediastinum

It is below the upper one. This in turn is subdivided by the presence of the heart in anterior, middle and posterior.

1. **Anterior mediastinum:** Located in front of the pericardium, behind the sternum and above the diaphragm. It contains internal mammary vessels, lower end of the thymus, fatty areolar tissue and lymph nodes.
2. **Middle mediastinum:** It is the widest region of the lower mediastinum and contains the heart and its pericardium, the ascending aorta, arteries and pulmonary veins, main bronchi, superior cava, phrenic nerves and other structures.
3. **Posterior mediastinum or retrocardiac space of Helzknecht:** It is limited to the front by the heart, behind by the last eight dorsal vertebrae, above by the superior mediastinum and below by the diaphragm. It contains the esophagus, the thoracic descending aorta, the pneumogastric, sympathetic and intercostal nerves, the thoracic duct, the azygos and hemiazygos veins, the accessory azygos veins, sympathetic chains, lymph nodes, areolar and fatty tissue.

The mediastinum receives lymphatic drainage from the neck, anterior chest walls, lungs, esophagus, pericardium, diaphragm and abdominal cavity [1,5,13].

The mediastinal nodes are divided into

Previous group

It has three ganglion chains, all in the upper mediastinum, two vertical and one transverse, which is anastomous to the first two.

Middle group

Intertrack colobronchial nodes (located below the tracheal bifurcation), peritracheal and pulmonary pedicle.

Posterior group

Aortic esophageal ganglia (located along the esophagus).

The location of a tumor in one or another compartment will orient the nature of said lesion, together with the patient's clinic and the imaging characteristics [5,10].

On the other hand, the functions of the mediastinum are multiple, among which is that of equilibrium because it is a double membrane buffer, being subject to the influence of the negative pressure that is found in both pleural cavities, which allows it to pedicular pathological conditions towards the side of lower pressure. The mediastinum responds to these facts by maintaining a normal function of the organs. Hemodynamic function, being negative, -3 mm Hg, mediastinal pressure allows thoracic aspiration. Various accessory functions: action on respiratory and cardiac rhythm, action on respiratory function, action on blood pressure, action on cardiac motility and coronary debit, action on the neurocognitive system, phagocytosis and tissue fixation function, mediastinal relationships -endocrine and mediastinum-neurotrophic [1,14].

Classification of mediastinal tumors

In 2004, the SEER (Surveillance epidemiology and end results) and the World Health Organization proposed a (modified) classification of mediastinal tumors, based on histology [2,5,14].

Neurogenic tumors

- Origin in the peripheral nerves: Neurofibroma; schwannoma (neurilemoma) neurosarcoma.
- Origin in sympathetic ganglia: Ganglioneuroma; ganglioneuroblastoma; neuroblastoma.
- Origin in the paraganglionic tissue: pheochromocytoma; paraganglioma (tenonectomy).

Thymic tumors

Thymoma, hypolipemic, thymic carcinomas (neuroendocrine, epidermoid, basaloid, adenocarcinoma, undifferentiated, sarcomatous, clear cell and mixed).

Lymphomas

- Hodgkin's disease.
- Non-Hodgkin lymphoma (B or T cell, follicular, anaplastic, MALT, marginal) gray zone lymphoma.

Germ cell tumors

- Seminoma, embryonic carcinoma, endodermal sinus or yolk sac tumor, choriocarcinoma, mixed germ cell tumor (more than one histological type), polyembryoma, mature teratoma, immature teratoma, teratocarcinoma.
- Hernias.
- Morgagni, Bochdalek, hiatal, paraoesophageal.
- Mesenchymal tumors.
- Solitary fibrous tumor and fibrosarcoma.
- Lipoma and liposarcoma.
- Myosarcoma.
- Malignant fibrous histiocytoma.
- Mesothelioma.
- Leiomyosarcoma, angiosarcoma.
- Rhabdomyosarcoma (pleomorphic, embryonic, fusiform cells, mixed).
- Xantogranuloma.
- Mesenchyme.
- Hemangioma.
- Plasmacytoma.
- Hemangioendothelioma.
- Hemangiopericytoma.
- Lymphangioma.
- Lymphangiomyoma.
- Lymphangiopericytoma.
- Sarcomas (undifferentiated; of primed, fusiform, giant or small cells; embryonic; histiocytic; and Langerhans cells).
- Ectopic Endocrine Tumors.
- Thyroid.
- Parathyroid.
- Cysts.
- Pneumopericardium, bronchogenic, enteric, thymic, thoracic duct, Meningoceles.
- Adenopathy's.
- Inflammatory, granulomatous, sarcoid.

Some clinical-epidemiological aspects

Approximately 40% of patients with mediastinal tumors are asymptomatic. Thymomas and thymic carcinomas constitute the most common neoplasms of the mediastinum [3,10,11]. Thymomas represent 50% of tumors of the anterior mediastinum and between 15-20% of total mediastinal tumors. In children [20,21] the neurogenic tumors of the posterior mediastinum are the most frequent and represent almost 50% of the mediastinal tumors (in Cuba [20] the approximate rate of malignant neoplasms in children under 15 years of age is 12 for each 100 000 inhabitants Neuroblastoma occupies fifth place in case reports, with a rate of 0.5 per 100 000 inhabitants), in contrast to adults, in which thymoma in the anterior mediastinum is the most common [10,11].

Lymphomas represent 20% of all mediastinal neoplasms in adults and 50% in children [20-22]. Mediastinal germ cell tumors constitute 10 -15% of mediastinal tumors and those same percentages of tumors mediastinal anterior [23-25]. Mediastinal cysts constitute between 20-32% of all primary mediastinal tumors and among them bronchogenic cysts represent 50 - 60% [26-28]. Mesenchymal tumors are diagnosed in 10% of the total mediastinal tumors and are more frequent in the pediatric population; Among these, lipomas are the most frequent [29-31]. Castleman's disease can settle in any ganglionic group or territory, but mostly originates in the thorax (70%) [32,33]. They are not rare teratodermoids, lymphomas, tumor conditions of the thyroid and parathyroid glands, primary mediastinal carcinoma, germ cell tumors, hamartomas, plasmacytomas and tumors of lymphatic origin, mainly in the anterior part (they represent about 17%), where the most common are Hodgkin lymphomas, a variety of nodular sclerosis and a better prognosis; but non-Hodgkin lymphomas, with a similar clinical presentation, are of poor evolution and prognosis [34-36].

Mediastinal surgical conditions become a controversial issue, due to the variety of clinical manifestations, commitment of adjacent structures and complexity of the surgical interventions to be performed [1,2,8]. Despite the local involvement, the intervention of secretory factors Tumor and immunological and the multiple systemic diseases that may accompany it, occasionally occur asymptomatically, only as an incidental finding in radiographic studies [6,10,37]. Localized effects include cysts and primary tumors, infections, hemorrhages, emphysema and aneurysms; Systemic diseases: metastatic tumors and granulomatous and inflammatory disorders. Lesions originating in the esophagus, in large vessels, trachea and heart manifest as a mass and establish a differential diagnosis with the primary mediastinal disease [2,11,14].

Clinical manifestations

The symptomatic picture is very flowery; however, there is a non-negligible percentage of asymptomatic patients, so that confirmation of the presence of the tumor in these patients is usually fortuitous, almost always through a chest x-ray. Technological development has allowed the diagnosis to be more frequent and accurate [6,14,19].

Painful manifestations are the most common. In general, retrosternal, with irradiation on the back, or erosive bone or nerve or brachial pain, typical of nerve tumors, particularly with intramedullary prolongation. They can also be caused by tumor extension to the chest wall, pleura, diaphragm or other sites, which would be indicative of malignancy [1,2,11].

Similarly, there are circulatory manifestations that are usually the most apparent and are generated by compression of the venous return circulation, which causes the following: [34,35,37].

- Edema of the neck and face, appears mainly on the eyelids.
- Inflammation and turgor of the veins, initially at the base of the tongue, which increases when speaking, coughing, swallowing and tilting the head and thorax forward.
- Cyanosis and collateral circulation are the latest signs. Affect the antarthritic region, shoulder and base of the neck; but if it involves the acid vein, very manifest thoracoabdominal circulation appears. This syndrome is known as superior vena cava syndrome. In general, it is produced by malignant diseases and therefore its prognosis is bad; however, a few cases may have a benign origin, either from vascular diseases (arterithanious fistula, aortic aneurysm, upper vena cava thrombosis) or others (tuberculosis, traumatic hematoma, cystic fibroid, retrosternal thyroid).

The respiratory clinical picture usually consists of dry cough and dyspnea with inspiring predominance [12,13,28].

Digestive symptoms are usually attributable to compression of the esophagus; the fundamental is dysphagia, almost always late, intermittent and sometimes paradoxical (greater for liquids than for solids) [14,17,34].

In addition, there may be neurological manifestations, capable of presenting in the form of acute neuralgia or motor paralysis. Thus, the pneumogastric condition causes sialorrhea, bradycardia, dyspnea and cough. Sympathetic paralysis is manifested by Claude Bernard-Horner syndrome (palpebral ptosis, myosis, exophthalmia and narrowing of the eyelid opening). In neurogenic tumors, medullary compression may occur, but it is rare. Finally, in Tobias-Pancoast syndrome, brachialgia is common due to invasion of the brachial plexus [32,36,37].

Parietal manifestations are rare and are observed especially in childhood: bulging with thoracic deformation or neoplastic invasion of the wall; but in cysts and benign tumors they are less frequent, because compression allows the displacement of the mediastinal elements; on the contrary, they are more common in the malignant ones, because the fixation and invasion of the tumor is added to the structures [14,16].

Diagnosis

Mediastinal tumors are neoplasms that form in the mediastinum, which contains the heart, large vessels, esophagus, trachea, thymus and connective tissues. The most common location of these tumors depends on the patient's age [9,35,36]. For example, in children they are more common in the posterior compartment and are usually of neurogenic and benign origin [20,21,25], while, on the contrary, in adults they form in the former and usually constitute malignant lymphomas or thymomas, which occur more commonly in people from the third to the fifth decades of life [37].

In daily practice it is possible to diagnose these entities through the pathological study, but the combination of clinical and radiographic findings is essential, together with auxiliary examinations such as immunohistochemistry, electron microscopy and modernly, chromosomal analysis [24].

Before a patient with a mediastinal tumor, a differential diagnosis must be established between the various causes that originate it. For this it is necessary to take into account the following aspects:

- **Age:** In children, neurogenic tumors and entheogenic cysts are the most frequent mediastinal masses; in adults, neurogenic tumors, lymphomas and thymic cysts [2].

- **Symptoms:** Laboratory tests: when certain tumors are suspected [2,8,10], for example: thyroid function tests in patients with endothoracic goiter, parathyroid hormone levels, acetylcholine antireceptor antibodies to rule out myasthenia gravis in patients with suspected Thymoma, even if they are asymptomatic, α-fetoproteins and human chorionic β-gonadotropin, 24-hour urine excretion of vanilmandleic acid and catecholamines in the pheochromocytoma, paraganglioma and neuroblastoma or others and, of course, imaging tests [6,7], namely.

- **Simple chest x-ray:** It is the initial diagnostic test that shows where the lesion is. Posteroanterior and lateral and sometimes oblique projections allow to evaluate the size, location and density of the tumor, as well as the presence of calcifications in the mass.

- **CT scan of the chest (CT)**: It is a routine study in patients with a mediastinal mass, which makes it possible to determine: situation, size, shape, density and composition of the tumor, presence and type of calcifications, characteristics of the border of the tumor, relations with neighboring structures, presence and location of lymphadenopathy and other associated findings, in addition to being able to differentiate solid masses from cystic. It also allows to discriminate the contents of the hidden areas of the mediastinum in conventional radiographs, due to the superposition of the sternal, cardiac and spinal opacities [1,37].

- **Nuclear magnetic resonance:** It is indicated in cases of study of neurogenic tumors, to confirm whether or not there is involvement of nerve structures, in patients in whom the contrast due to renal failure or allergy cannot be used to perform the CT scan, to determine if there is vascular or brachial plexus invasion or other process. It has the advantage of not emitting ionizing radiation and may be more useful than CT for assessing dilation of the conjunct foramen in neurogenic tumors of the posterior mediastinum. He has also been shown superior to diagnose different types of cysts [1,5,14].

- **Ultrasound:** It distinguishes cystic and solid lesions and serves to direct the FNA. Transesophageal echo is used in the study of esophageal lesions and paraoesophageal structures [6,7,10]. It may be useful to evaluate tumors located in the middle mediastinum and in patients with cardiac tamponade or pulmonary stenosis.

- **Isotopes:** It has a sensitivity of 93% and a specificity of 100% in the diagnosis of endothoracic goiter if there is functioning thyroid tissue, to detect lymphomas and differentiate it from thymomas, it locates ectopic gastric mucosa, among other advantages [1,14].

- **Positron emission tomography (PET):** It is useful for the diagnosis and staging of bronchogenic carcinoma and lymphomas and for monitoring germ cell tumors after treatment [1,5,9,37].

Other important diagnostic techniques, especially in the case of fine needle aspiration biopsy (BAAF) are:

- **Bronchoscopy:** It is valid for the study of mediastinal lesions with associated pulmonary involvement and for puncture of lymphadenopathy [28,29].

- **Puncture-aspiration with fine needle:** It has limitations, as larger samples of tissue are needed. It is contraindicated when a thymoma is suspected, due to the high risk of dissemination along the needle path [5,15].

- **Biopsy:** The technique is performed depending on where the lesion is located. If it is not accessible by specific techniques, it is necessary to perform a thoracoscopy, or mediastinoscopy.

In some cases, bone marrow, peripheral ganglia, mediastinal ganglia or mass biopsies may be performed by transbronchial or transesophageal aspiration, with ultrasound support and special needles.

Transthoracic aspiration biopsy with a fine needle, aided by an imaging procedure, is a simple, highly sensitive procedure to diagnose a malignant neoplasm; but not to specify the type of tumor, so it is often necessary to resort to anterior mediastinotomy, mediastinoscopy, thoracoscopy or minitoracotomy to take a sufficient sample of at least 1 cubic ml; Rarely, subsequent mediastinotomy is used. In cases of localized tumor, without metastasis, with incontrovertible preoperative diagnosis, it is preferable to proceed with the resection of the tumor mass during the same surgical act of the biopsy, extending the same access or performing a partial or total sternotomy [5,10,17].

Mediastinoscopy

This study can be carried out with the classic equipment or through the videomediastinoscope, a technical advance that allows video images to be incorporated into the conventional instrument in order to obtain a better view of the mediastinal structures, as well as with the bivalve mediastinoscopy that widens the mediastinal space and allows bimanual work with the help of the assistant. At present, video mediastinoscopy (VMC) or video-assisted mediastinoscopy is the preferred modality in most institutions, since the classic variant is relegated to the background [18,19].

Other studies

They are not indispensable or necessary for the diagnosis of mediastinal tumors, but they complement the information obtained; for example, esophagogram, esophagoscopy, bronchoscopy, echo-

bronchoscopy and echocardiogram, to assess the degree of contact or invasion of these organs. If a germinal tumor is suspected, an abdominal CT scan should be indicated to explore the retroperitoneum and a testicular ultrasound, whether or not tumor mass is palpated [37].

Mediastinal surgical access [1,16,37].

The main routes of surgical access to the mediastinum are

Upper track: Carlens pathway (suprasternal incision), left lateral cervical.

Thoracic pathways

1. Anterior (intrapleural): middle sternotomy, partial sternotomy (with suprasternal incision or trap door). Total sternotomy or Milton Duval and the Chamberlain pathway.
2. Thoracotomies (intrapleural): anterolateral (Rienhoff), posterolateral (Sweet), vertical axillary (Nuncio di Paola).
3. Posterior thoracotomies (extra pleural): right posterior paravertebral route, pleural window.

Bottom way

Retrosternal and preperitoneal, transdiaphragmatic, trans hiatal pericardial window.

Treatment

The treatment is based on different therapeutic bases, but for the vast majority, surgery is of choice, with the exception of lymphomas and syringomatous and some metastatic germ cell tumors, in which case chemotherapy or radiotherapy is the therapeutic of choice. Complete surgical excision is considered ideal, although reduction in lesions of initially inoperable size is also indicated [38-41].

In many patients with mediastinal tumors, surgical treatment is complex and often requires a difficult technique [15,16,42]. Knowledge of the mediastinal physiology and ventilation control, as well as the new anesthetic techniques allows applying a safer surgical treatment in this region of the organism, which reduces morbidity and mortality rates [8,43].

Statistical data in our environment

On the other hand, in Latin America, according to a Costa Rican act where the analysis and follow-up of patients with mediastinal tumors discharged from the metropolitan hospitals of Costa Rica during 1996, with five-year follow-up, was determined that the incidence and malignancy of those Neoplasms in that country are high when compared with that described in the international literature [44].

In Cuba, the Patient Care Program with Cancer is prioritized by the National Health System of the country; however, there are very few published studies on mediastinal neoplasms, among which Mederos., et al. 12 stands out at the "Comandante Manuel Fajardo" University Hospital, where the major surgical interventions performed in the period from 1994 to 2010 were evaluated and selected general thoracic surgery operations (which were 688); from this universe, those operated by mediastinal conditions were taken, which accounted for 31 (4.4% of those operated for thoracic surgeries). In another investigation in Santiago de Cuba, carried out by Bestard and others (45) over a period of 16 years (1989 - 2005), 32 patients with mediastinal tumors were diagnosed and treated, whose mortality was 3.1%.

It follows that in the Provincial Hospital "Saturnino Lora" the incidence of patients diagnosed with mediastinal neoplastic diseases has increased; However, although this is a national reference center in thoracic surgery, in addition to the fact that mediastinal conditions are part of the institution's problem bank and the General Surgery Service, a detailed description of the characteristics was not available to date. of these neoplastic diseases.

Taking these considerations into account, an observational, descriptive, case-series study was conducted with a sample of 37 patients admitted and operated in the General Surgery Service of the "Saturnino Lora" Provincial Teaching Hospital of Santiago de Cuba, with a diagnosis of Mediastinal tumor during the years 2010 to 2017 (Kalil Keita Ibrahima. Characterization of patients operated for mediastinal tumors according to clinical-epidemiological, diagnostic and surgical-evolutionary variables Thesis in option for the title of first degree specialist in General Surgery, 2018).

Among its main results, the female sex prevailed with 23 patients and the age range between 31 and 40 years (11 cases). The posterior compartment was mostly affected (11 cases), as well as tumors with sizes between 7 and 9 cm (17 cases). The sternotomy was the access route of predilection and complete excision was achieved in 31 patients. Malignant histological varieties prevailed (54.1%); There were only four relevant complications and two deaths, for which reason it was concluded that the definitive diagnosis of these tumors is generally established by post-surgical histopathological study, although computed tomography associated or not with percutaneous biopsy is the golden rule for Preoperative diagnosis Malignant tumors predominated in which a wide range of histological varieties were identified, attributable to the characteristics of the affected organ. The selection of the route of entry to the thorax, as well as the surgical procedure were conditioned by the place and size of the tumor in the mediastinum. The results of the surgical treatment reveal low levels of morbidity and mortality in this series.

Final considerations

Mediastinal neoplasms are rare, they can appear at any age, usually between the third and fifth decades and most are discovered incidentally on a routine chest x-ray in asymptomatic patients. Malignant mediastinal tumors are rare, but benign tumors are a diagnostic challenge for radiologists and pathologists. In malignant neoplasms a wide range of histological varieties are identified, attributable to the characteristics of the affected organ.

The definitive diagnosis is generally established by post-surgical histopathological study, with the exception of lymphomas and syringomatous and some metastatic germ cell tumors, although

computed tomography associated or not with percutaneous biopsy is the golden rule for preoperative diagnosis. The selection of the route of entry to the thorax, as well as the surgical procedure both endoscopic and conventional are conditioned by the location and size of the tumor in the mediastinum.

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