CASE REPORT

Mediastinal teratoma: A case report

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Mediastinal teratomas are rare, generally benign. They are diagnosed in young people, occasionally in adults. They are mature, well differentiated, contain cystic or solid areas, or both, since they derive from more than one germ layer. They comprise 8 to 13% of all mediastinal tumors. 20% are malignant. We present the case of a 17-year-old male who started with a productive cough and dyspnea, a mediastinal tumor was confirmed. He was operated on with success. Superior vena cava and innominate vein were replaced by Dacron and PTFE grafts, respectively. A mature cystic teratoma was reported by histopathology.

***Key words:** Germ cell tumor; Mature teratoma; Mediastinum; Teratoma.*

Los teratomas mediastinales son raros, generalmente benignos. Se diagnostican en jóvenes, ocasionalmente en adultos. Son maduros, bien diferenciados, contienen áreas quísticas, sólidas o ambas ya que derivan de más de una capa germinal. Comprenden del 8 al 13% de todos los tumores del mediastino. 20% son malignos. Presentamos el caso de masculino 17 años que inicia con tos productiva y disnea. Se corroboró tumor mediastinal. Fue operado con éxito. La vena cava superior y la vena innominada fueron substituidas con injertos de Dacrón y PTFE, respectivamente. El reporte histopatológico fue consistente para teratoma quístico maduro.

***Palabras clave:** Tumor de células germinales; Teratoma maduro; Mediastino; Teratoma.*

Cir Card Mex 2023; 8(2): 48-50.

Mediastinal teratomas are rare, usually benign. They are diagnosed in young patients, occasionally in adults [1]. They are mature, well differentiated, defined, encapsulated and contain cystic areas, solid or both, as they derive from more than one ectoderm, mesoderm and endoderm germ layer. Germ tumors are most common in the ovaries, testes, retroperitoneum, and sacrococcygeal region. Only 1 to 10% of germ cell tumors are located in the anterior mediastinum, and mediastinal teratomas are rare. They comprise 8 to 13% of all mediastinal tumors. About 20% are malignant [2]. Teratomas are only one of the several types of germ cell tumors. We present here a case of a 17-year-old patient with diagnosis of mediastinal mass. He was operated on with success, with a total tumor resection.

CLINICAL CASE

A seventeen year-old male patient began with productive cough and fever, treated by infectious process without improvement. Chest x-ray showed significant mediastinal widening. Computed Tomography (CT) of the chest showed a right mediastinal neoplasm of 11.6 cm by 8.6 cm by 15.2 cm, calculated volume of 800.8 cc, which involved the superior vena cava, with ganglion clusters at the level of the hepatic hilum (**Fig. 1**). Incisional biopsy was performed reporting germ cell tumor consistent with teratoma. Five sessions of chemotherapy were administered. Subsequently, the patient presented exacerbation of clinical symptoms including cough, dyspnea, loss of balance sometimes emetizing, loss of awareness with spontaneous recovery; as well as impossibility of concluding spoken sentences due to dyspnea of small efforts, orthopnea, asthenia and adynamia. The patient was admitted at our institution, and presented for surgical intervention.

Operation was performed by using femoral cannulation and middle sternotomy extended to the neck. Neoplasm was noted to occupying the entire surgical field. Proceeding to dissection with electrocautery of tumor edges, vena cave involvement was identified. Also, the innominate vein was involved. Both were sectioned and sutured from its jugular-subclavian confluence and at the junction with vena cave. The innominate vein was sectioned. Dissection of vascular structures and organs adjacent to the tumor such esophagus, trachea and brachiocephalic trunk with its carotid and subclavian bifurcation were carried on. A total dissection of tumor was completed, and its extraction was achieved (**Fig. 2**). Subsequently, neo cava was reconstructed with a 20mm Dacron graft as well as the innominate vein from the left jugular-subclavian junction with a 10mm ringed PTFE graft (**Fig. 3**).

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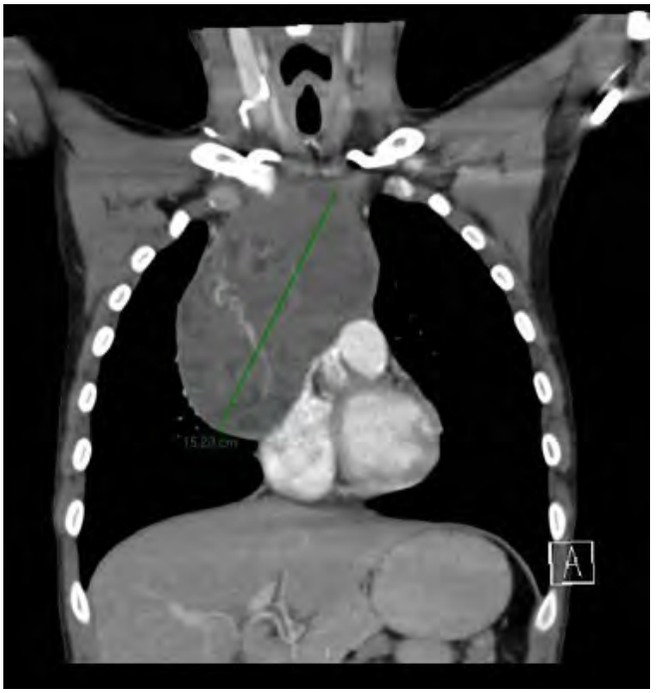

Figure 1. Computed tomography scan showed a mediastinal neoplasm of 11.6 cm by 8.6 cm by 15.2 cm, with a calculate volume of 800.8 cc, with superior vena cava involvement.

The surgical findings were as follows: anterior mediastinum tumor with extension to the right hemithorax and cervical region, of hard consistency with defined edges which surrounds in its entirety, the superior cava and innominate vein, totally surrounding the first supra aortic trunk with its division having as right limits rib cage and with adhesions to the right upper lobe, anterior sternum, left phrenic nerve, superior thoracic operculum, displacement of mediastinal structures to the left with wide displacement of the heart, with compression of the same. Anatomic-pathological report was consistent to diagnosis of mature cystic teratoma completely resected (**Fig. 4**).

The whole procedure was performed with recovery of volume by means of a circulation pump, without requiring support with the same. Postoperative evolution was free of complications. Hospital discharge was possible one week after operation.

COMMENT

The incidence of teratoma is about 1 in 4,000 live births. the various sites in decreasing order of frequency of occurrence are as follows: sacrococcygeal (40%), ovary (25%), testicle (12%), brain (5%) and other sites including neck and mediastinum (18%) [2]. Teratomas can be mature: well differentiated, poorly differentiated, immature, or malignantly transformed [2]. Our case was a mature cystic teratoma. They arise from ectopic pluripotent stem cells that do not migrate to the gonad from the germinal endoderm. A theory to explain extragonadal germ cell tumors was proposed by Fine, who suggested that there was an error in the migration of primitive germ cells along the urogenital crest [3]. The anterior mediastinum is the most common location of extragonadal germ cell tumors [4]. Anterior mediastinal teratomas are rare, with an incidence of 11% [5]. It is more frequent in young men from 15 to 40 years of age as it was in our case.

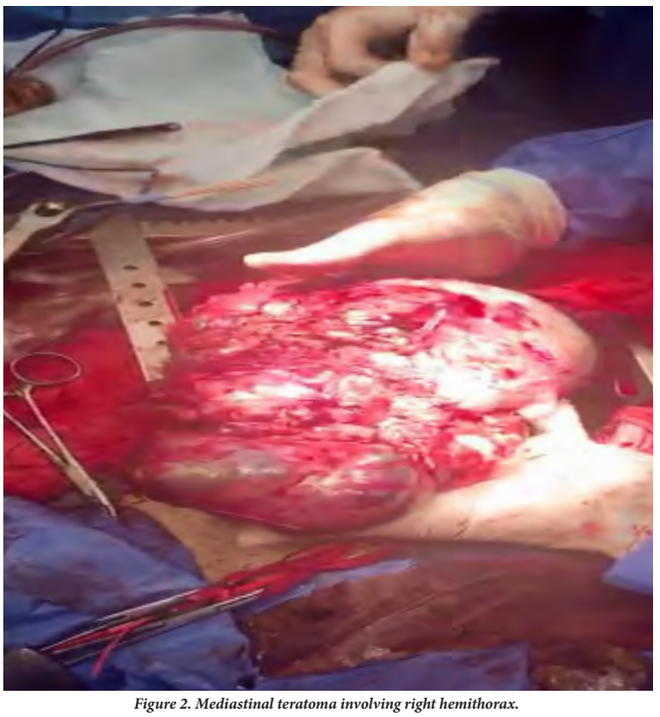

Figure 2. Mediastinal teratoma involving right hemithorax.

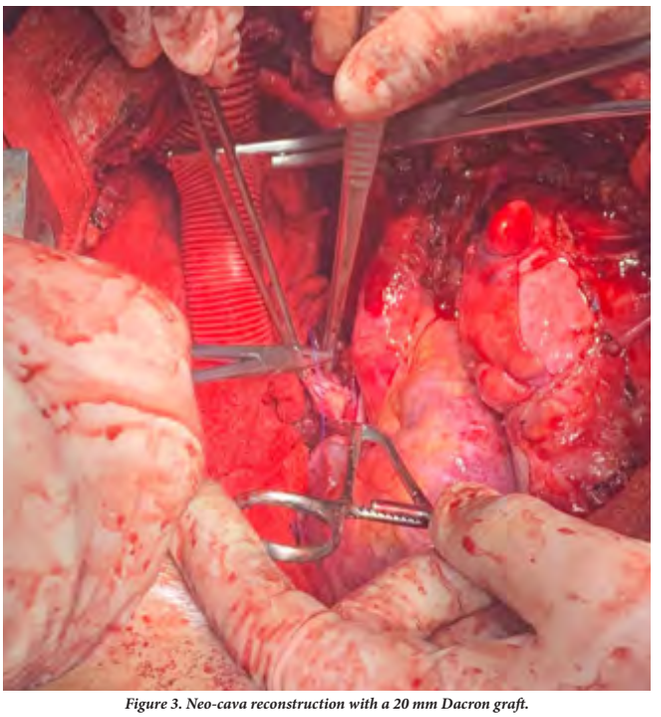

Figure 3. Neo-cava reconstruction with a 20 mm Dacron graft.

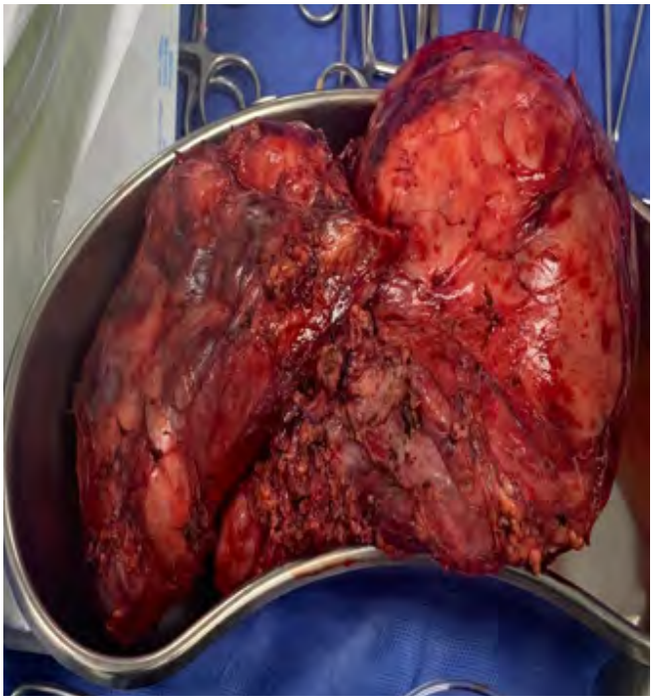

Figure 4. Mature cystic teratoma completely dried. Tumor size was 22.5 cm by 12.5 cm by 10 cm, weighting 1.850 kg.

There are no signs or symptoms when the tumor is initially diagnosed in about 60% of cases [5]. However, larger tumors can press on mediastinal structures and produce symptoms such as cough, dyspnea, chest pain, or lung infections. In some cases, pleural or pericardial effusions, lipoid pneumonia, pneumothorax, and acute cardiac tamponade have been reported [5]. In our case, the symptoms were productive cough, fever and subsequently dyspnea.

Diagnosis is made by observing abnormal widening of the mediastinum and computed tomography provides valuable information about the particular characteristics of the tumor, especially for planning the route to take a biopsy or perform a surgical approach [6]. On CT scan, teratoma is seen as smooth or lobed heterogeneous solid cystic lesions and the presence of a combination of fluid, soft tissue, calcium, and fat is highly specific [7].

Complete resection is curative for a benign teratoma, and there is no role for adjuvant chemotherapy or radiation therapy [7]. In our case he had already been treated by the pediatric oncology service with 5 cycles of chemotherapy without improvement of the symptoms or reduction of the size of the tumor, with worsening of the symptoms so he finally consulted with our service for surgical resection.

The particularity of this case is that in addition to being a very large tumor with compressive symptoms included the superior and innominate vena cava without the possibility of resecting it without injuring them, so it was decided to perform the resection of the superior and innominate vena cava together with the tumor and subsequently perform the reconstruction with Dacron graft for the superior vena cava and PTFE for the innominate vein, making the procedure more difficult. However, an excellent outcome was achieved, and the patient could be discharged free of complications.

FUNDING: None

DISCLOSURE: The authors have no conflicts of interest to disclose.

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