СЛУЧАЙ ИЗ ПРАКТИКИ

SUCCESSFUL SURGICAL TREATMENT OF THE GIANT MEDIASTINAL SEMINOMA COMPLICATED BY THE SYNDROME OF THE SUPERIOR VENA CAVA IN A 45-YEAR-OLD PATIENT

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Purpose. Due to the primary mediastinal seminoma rarity and the absence of cases with it complete surgical removal description in world literature, according to our data, we would like to bring to your attention the following observation of the patient.

Materials and methods. A 45 years old patient with a mediastinal mass. In one of the oncologic clinics, after transsternal puncture, tuberculosis was morphologically diagnosed. On admission to our clinic, a giant tumor of the anterior mediastinum was visualized with multislice computed tomography (MSCT). It was located from the subclavian vein to the level of VII ribs. The diagnosis on admission was intrathoracic lymph nodes tuberculosis, but it raised doubts. Due to the presence of vena cava syndrome, it was decided to conduct a medical diagnostic surgery as a matter of urgency. From the right lateral thoracotomy giant formation weighing 1500gwasremoved. It compressed heart, mediastinum vessels and trachea.

Results. On the basis of a combination of histological and immunohistochemical signs, a typical seminoma was diagnosed. Postoperatively, the patient received 3 courses of chemotherapy from 9 prescribed (refusal of treatment). 9 years after surgery, the patient is healthy, working, without recurrence. Radiological diagnostic methods application does not allow definitively diagnosing the mediastinum seminoma, since in this case it is impossible to differentiate it from tumors of a different etiology. A histomorphological study with transthoracic biopsy is considered to be the “goldstandard” of diagnosis, however, even with this method, diagnostic errors are possible. In our case, we performed surgery without re-biopsy due to the rapid deterioration of the patient's condition.

Conclusion. In our opinion, the right lateral access is the most successful for removing giant mediastinal tumors, from which manipulations in the left pleural cavity through the anterior mediastinum are also possible.

Keywords: seminoma, diagnostic imaging, surgery, MSCT.

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УСПЕШНОЕ ХИРУРГИЧЕСКОЕ ЛЕЧЕНИЕ ГИГАНТСКОЙ СЕМИНОМЫ СРЕДОСТЕНИЯ, ОСЛОЖНЕННОЙ СИНДРОМОМ ВЕРХНЕЙ ПОЛОЙ ВЕНЫ У ПАЦИЕНТА 45 ЛЕТ

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Цель исследования. В связи с редкостью первичной семиномы средостения и отсутствия, по нашим данным, описания в литературе случаев полного хирургического удаления гигантской первичной семиномы средостения, нам хотелось бы представить вашему вниманию следующее наблюдение пациента.

Материалы и методы. Пациент, 45 лет, с объемным образованием средостения. В одной из онкологических клиник после трансстернальной пункции морфологически поставлен диагноз туберкулез. При поступлении в нашу клинику при компьютерной томографии (КТ) визуализировалась гигантская опухоль переднего средостения, расположенная от подключичной вены до уровня VII ребра. Направительный диагноз туберкулеза внутригрудных лимфоузлов (ВГЛУ) вызывал сомнения. В связи с наличием синдрома полой вены, решено провести лечебно-диагностическую операцию в срочном порядке. Из правой боковой торакотомии удалено гигантское образование весом 1500 г, сдавливающее сердце, сосуды средостения и трахею.

Результаты. По совокупности гистологических и иммуногистохимических признаков был поставлен диагноз типичной семиномы. Послеоперационно пациент получил 3 курса химиотерапии из 9 назначенных (отказ от лечения). Спустя 9 лет после операции пациент здоров, работает, рецидивов не было.

Обсуждение. Использование методов лучевой диагностики не позволяет окончательно поставить диагноз семиномы средостения, так как при этом невозможно ее дифференцировать от новообразований другой этиологии. Гистоморфологическое исследование путем трансторакальной биопсии считается «золотым» стандартом диагностики, однако, даже при этом методе исследования возможны диагностические ошибки. В нашем случае мы предприняли операцию без повторной биопсии из-за быстрого ухудшения состояния больного.

Выводы. По нашему мнению, наиболее удачен для удаления гигантских опухолей средостения правый боковой доступ, из которого также возможны манипуляции и в левой плевральной полости через переднее средостение.

Ключевые слова: семинома, диагностическое изображение, хирургия, компьютерная томография.

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Introduction. Germ cell tumors usually have a gonadal origin. Those with extragonadal origin (Extragonadal Germ Cell Tumors - EGCTs) represent only 2-5% of all male germ cell tumors [1]. Germ cell tumors account for 10-20% of all tumors of the mediastinum [2]. Among germ cell tumors of the mediastinum, primary seminoma is the second most common tumor (37%) after teratoma and accounts 20% of all EGCTs [2, 3]. Recent years in Russia the tuberculosis (TB) proportion within other disorders in differential diagnosis of mediastinal neoplasms increased [4].

Proceeding from the literature, data on the rarity of removed primary seminoma of the mediastinum and the absence in literature of cases of radical surgical treatment of the giant primary seminoma of the mediastinum in the literature, we find the following clinical case interesting.

Description.

A 45-year-old male admitted in our department for further examination of a giant mediastinal mass with diagnosis – intrathoracic lymph nodes tuberculosis (TB). Previously this patient

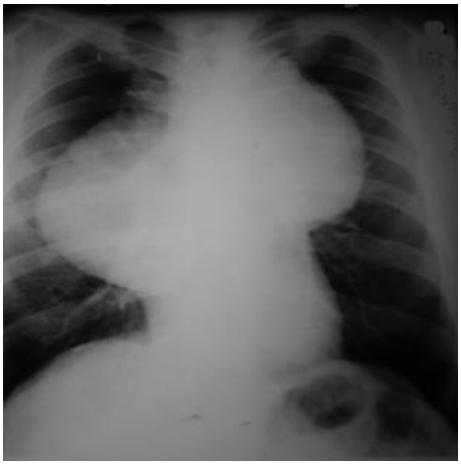
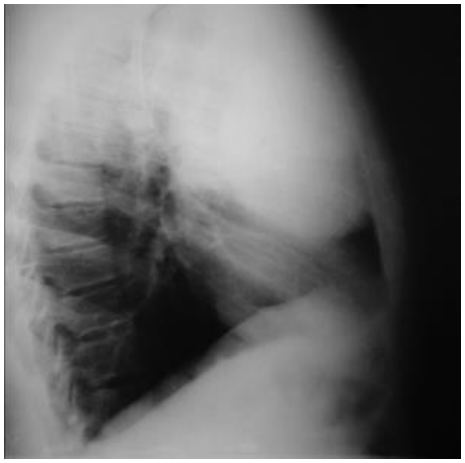


Fig. 1 a (Рис. 1 а)



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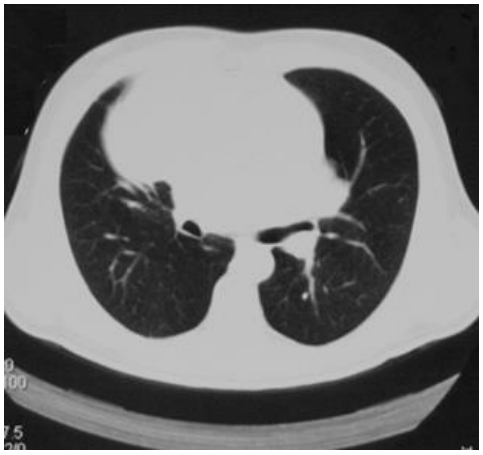


Fig. 1 c (Рис. 1 в)

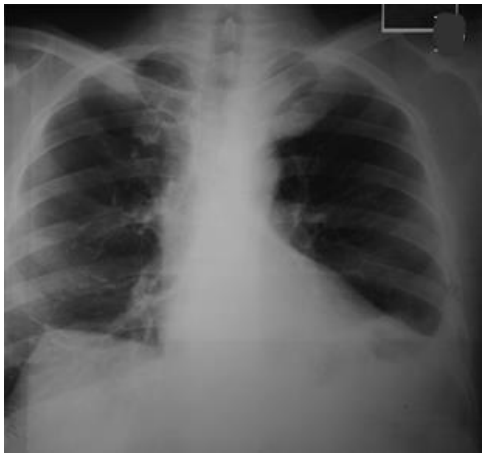


Fig. 1 d (Рис. 1 г)

Fig. 1. a - X-ray of the chest, AP view, on admission. b - X-ray of the chest, lateral view. c – MSCT before surgery. d - X-ray of the chest, after surgery.

Before surgery: a giant mass of the anterior mediastinum. It lies between the subclavia vein and VII-VIII ribs. This mass compresses the heart, the trachea and mediastinum vessels. The giant volumetric formation of a homogeneous structure is located in the anterior mediastinum. In the upper part it protrudes 6 cm to the left from sternum and in the lower part - 7 cm to the right. The contours are smooth, clear.

Рис. 1. а - Рентгенограмма органов грудной клетки, прямая проекция, при поступлении. б - Рентгенограмма органов грудной клетки, боковая проекция.в - МСКТ, аксиальная плоскость; до операции. г – Рентгенограмма органов грудной клетки после операции, прямая проекция.

До операции: гигантское образование переднего средостения, между подключичной веной и VII-VIII ребрами. Образование сдавливает сердце, трахею и сосуды средостения. Гигантское объемное образование однородной структуры расположено в переднем средостении. В верхней части выступает на 6 см влево от грудины, в нижней части - на 7 см вправо. Контуры ровные, четкие.

passed transsternal puncure with biopsy at one of oncology clinics. After biopsy there tuberculosis was determined and patient was routed to our clinic. This giant mediastinal mass was discovered during a chest X-ray. Patient presented symptoms such as dyspnea, chest pain, weakness and dizziness.

Examination revealed expanded veins on the neck and puffiness of the face. On an ECG, sinus tachycardia of 105 bpm, hypertrophy of the right atrium and right ventricle were determined. Indicators of blood gases were without abnormalities. Mycobacterium tuberculosis and atypical cells were not revealed in the sputum with LED fluorescence microscopy. A chest X-ray revealed a giant volumetric formation of a homogeneous structure (Fig. 1 A, B).

These data were not enough to diagnose and resolve further patient management strategies. In this regard, to clarify the location, size and syntopy of this mass a chest CT was performed. (Fig. 1 C)

The diagnosis of tuberculosis raised doubts. Vena cava syndrome was diagnosed according to compression of mediastinal vessels, puffiness and swelling of chest upper half and face of the patient. Due to the facts mentioned above, we abandoned the secondary transsternal biopsy.

We decided to make a cure-diagnostic thoracotomy with partial or full resection of the giant mass for resolving the potentially fatal condition of the patient because of the fast progression of vena cava syndrome.

The surgery was performed via right thoracotomy in the 4th intercostals space. Pleural cavity was clear. A giant tumor was found in the ante-

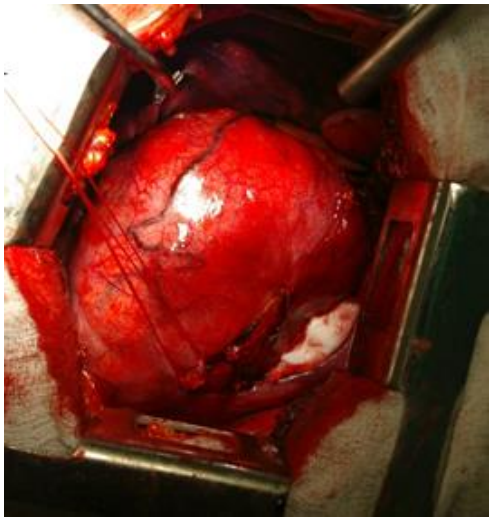
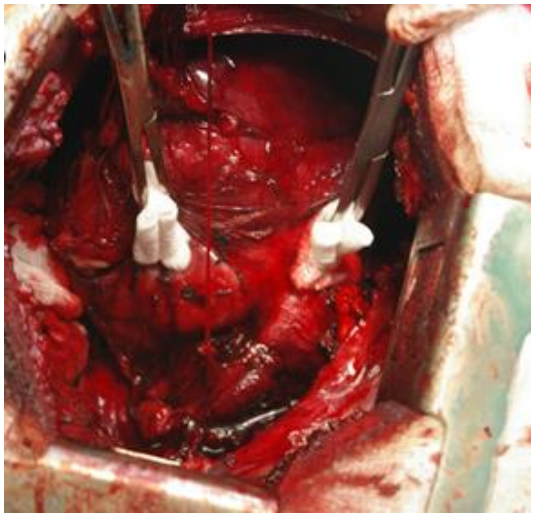


Fig. 2 a (Рис. 2 а)



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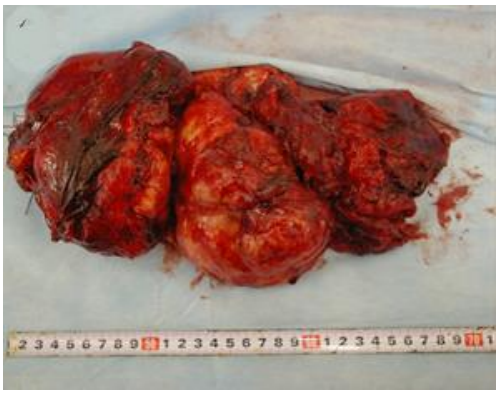

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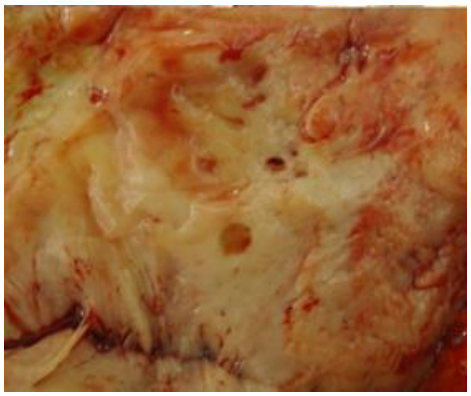


Fig. 2 d (Рис. 2 г)

Fig. 2. Photos.

a, b - Stages of mobilization of the mediastinal tumor. c - Removed tumor. d - A homogeneous and whitish masses in the section.

Рис. 2. Фото.

а, б - Этапы мобилизации опухоли средостения. в - Удаленная опухоль. г - Однородные, бледные разрастания в разрезе.

rior mediastinum. It occupied 1/3 of the hemitorax and compressed the heart, the trachea and blood vessels (Fig. 2A). It laid between the subclavia vein and the VII-VIII ribs. In the lung and pleura, pathologies and eruptions were not determined. After thoracotomy extension (Fig.2B), the giant tumor was excised together with the cellular tissue of the anterior mediastinum and the mediastinal pleura of both hemithoraxes. The tumor enveloped the superior cava vein, brachiocephalic vein and brachiocephalic artery trunk which required fragmentation of the tumor during its removal.

The superior cava vein, the brachiocephalic vein, the aorta arch and its branches were sharply separated together with the adventitia from the tumor. The tumor of dimensions 30x25x20 cm was spread widely to the left hemithorax with the invasion of the mediastinal pleura and left hemithorax cellular tissue.

It was resected within macroscopically unaffected tissues. The left pleural cavity was drained in the cross of the second intercostals space and the median clavicularis line with a separated port.

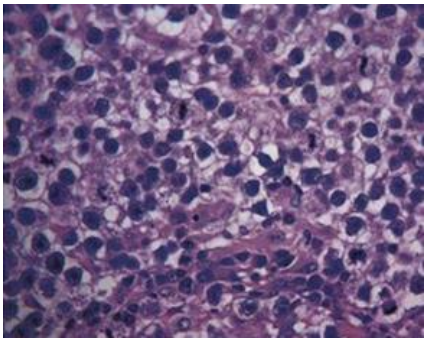


Fig. 3 a (Рис. 3 а)

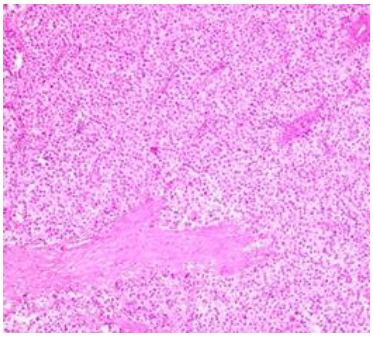
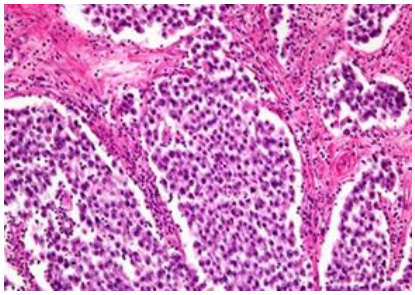


Fig. 3 b (Рис. 3 б)



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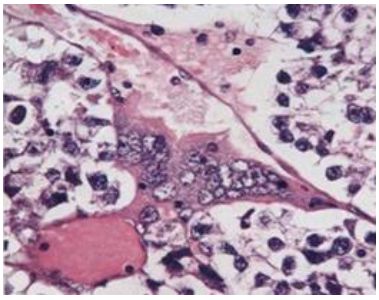

Fig. 3 d (Рис. 3 г)

Fig. 3. The section.

a - A typical seminoma. Tumor cells are mostly light, slightly eosinophilic, 15-25 microns in diameter. The cores are monomorphic, round or oval, with finely granulated chromatin and one or two prominent nucleoli. Staining with hematoxylin and eosin. x100

b - The typical seminoma. Multinuclear cell of syncytiotrophoblast near the vessel. Staining with hematoxylin and eosin. x630

c - Solid fields of cells, separated by connective tissue septa, with lymphoid infiltration. Staining with hematoxylin and eosin. x100

d - Multicore syncytiotrophoblast cell near the vessel. Staining with hematoxylin and eosin. X630

Рис. 3. Микропрепараты.

а - Типичная семинома. Опухолевые клетки в основном светлые, слегка эозинофильные, 15-25 мкм в диаметре. Ядра мономорфные, круглые или овальные, с тонко гранулированным хроматином и одним или двумя выступающими ядрышками. Окрашивание гематоксилином и эозином. х100.

б - Типичная семинома. Многоядерная клетка синцитиотрофобласта располагается около сосуда. Окрашивание гематоксилином и эозином. х630.

в - Твердые поля клеток, разделенных перегородками соединительной ткани, с лимфоидной инфильтрацией. Окрашивание гематоксилином и эозином. х100.

г - Многоядерная синцитиотрофобластная клетка возле сосуда. Окрашивание гематоксилином и эозином. х630.

The right pleural space was drained with 3 drains.

A gigantic multinodular tumor weighing 1500 grams resembled anterior mediastinum lymphoma. A homogeneous and whitish masses were in the section. (Fig. 2D).

The patients postoperative course was not complicated. The patient drains were removed on the 3rd day after surgery.

Histologically, the tumor consisted of fields of light cells with monomorphic rounded or slightly elongated cores. In these nuclei there were one or two nucleoli separated by septa with areas of hyalinosis. In some places, the cells form lacunae (Fig. 3A). In the tumor there was diffuse and focal lymphoid infiltration. The figures of mitosis were single. The giant multinucleate cells of syncytial type, located near the capillaries were revealed (Fig. 3B).

An immunohistochemical examination did not determine CD30 expression but high c-kit expression was revealed. In giant multinucleate cells, the presence of hCG (human chorionic gonadotropin) was identified.

Therefore, a typical seminoma was diagnosed. Taking it into account, an ultrasound examination of the scrotum was performed, but it did not reveal any abnormalities. On X-ray at discharge (Fig. 1 D), parallel mediastinum contours were determined. The patient was discharged on 27th day after surgery. Afterwards, the patient was observed during the year by an oncologist, three of nine planned courses of chemotherapy were performed. It was carried out according to the IODE treatment protocol: vepezid 100 mg i.v. at 1st and 5th days; Bleocin 15 mg i.v. at 1st and 5th days; cisplatin 100 mg i.v. in cap at 1st day; tropenol 5.0 from 1st to the 5th day. The patient refused subsequent chemotherapy after 3rd course. Subsequently, the patient returned to work. The patient is healthy 9 years after surgery, he works and had no relapses (Fig. 4).

Discussion.

Seminoma is primarily seen in young adult patients [2]. In patients with mediastinal germ cell tumors, the most common symptoms are cough, chest pain, dyspnea and vena cava syndrome. Less frequent symptoms are weight loss, dysphagia, hemoptysis, hoarseness and nausea [5]. For small tumor sizes, the disease can be asymptomatic. This could be the reason for incidental discovery of seminoma during a routine chest X-ray [2].

Radiological diagnostic methods application does not allow definitively diagnosing the mediastinum seminoma, since in this case it is impossible to differentiate it from tumors of a different etiology. A transsternal biopsy with histological examination is a “gold standard” in diagnostics. However, even with this diagnostic method application it is difficult to avoid diagnostic mistakes when the tumor is masked with secondary alterations (e.g. granulomatous inflammation) or insufficient amount of material was gathered during biopsy [3, 6].

A pathological process has to be differentiated from granulomatous inflammation, including TB etiology, during mediastinal masses thin-needle punctate examination. The microbiological examination in such cases is negative or can have a false positive result in the presence of material contamination. In the majority of cases, the diagnosis is made right after surgical material analysis.

We performed the surgery without masses etiology verification because of rapid patient’s

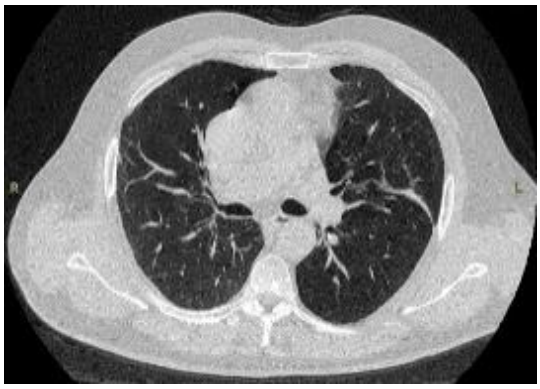

Fig. 4 a (Рис. 4 а)

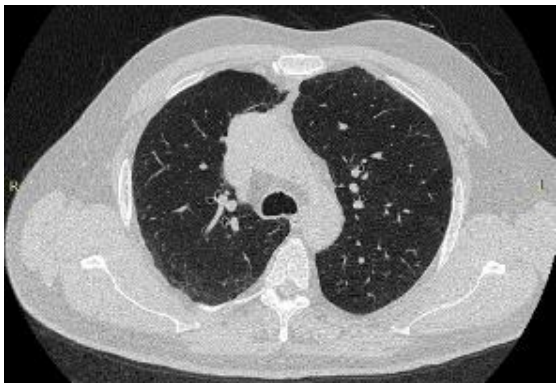

Fig. 4 b (Рис. 4 б)

Fig. 4. **MSCT, chest, axial views.**

9 years after surgery.

Рис. 4. **МСКТ, органы грудной клетки, аксиальная плоскость.**

9 лет после операции.

condition deterioration.

Conclusion.

C. Bokemeyer et al. have presented a significant case data regarding mediastinal seminoma in their multicenter analysis. According to these data, the five-year survival rate for 51 patients was 88%. Relapse occurred in 3 cases, while the data for the one patient was unknown [7].

In the literature, among some interesting cases of radical eradication of the primary seminoma of the mediastinum, we found three descriptions of such surgeries. In these cases, the size of tumors did not exceed 4 cm in diameter. For two of such cases the median sternotomy and for the last one posterolateral access were applied [3, 6, 8].

In our opinion, the right lateral access is the most successful for removal of giant mediastinal tumors, from which manipulations are also possible in the left pleural cavity through the anterior mediastinum.

Authors declare the absence of potential conflict of interests.

Authors transmit editorial right to article publication, guarantee its originality and certify that neither the article nor the figures had not been published previously and sent for publication in other editions.

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