Case Report **IJCR (2020) 4:165**

International Journal of Case Reports
(ISSN:2572-8776)

Surgical difficulties with a giant carcinoid in the anterior mediastinum

Miklos Boros MD[1*], Ulf Hermansson MD[1], Ingemar Vanhanen PhD[1]

[1]Department of Cardiothoracic Surgery, University of Linköping, Linköping, Sweden.

ABSTRACT

Atypical carcinoid in the anterior mediastinum is a rare neoplasm. In our case the huge mediastinal carcinoid was treated with surgery using a median sternotomy and clamshell incision because of the extension of the tumor. We describe our difficulties under the surgery and take a look at the literature.

Keywords: anterior mediastinum, giant carcinoid, surgery

Abbreviations:
GP – general practitioner
PET - positron emission tomography
CT- computed tomography
MDT – multidisciplinary team

***Correspondence to Author:**
Miklos Boros
Department of Cardiothoracic Surgery, 58185 Linköping, Sweden.
Tel: 0046739271523; Email: Miklos.Boros@regionostergotland.se

How to cite this article:
Miklos Boros, Ulf Hermansson, Ingemar Vanhanen. Surgical difficulties with a giant carcinoid in the anterior mediastinum. International Journal of Case Reports, 2020; 4:165.

eSciPub LLC, Houston, TX USA.
Website: http://escipub.com/

Case report

A 68-year-old, previously essentially healthy and medicine-free man, never smoker got a cold and because of that he went to the local GP with shortness of breath even at rest. His GP ordered a chest X-ray which showed a giant mediastinal shadow and he was admitted to AE in the local hospital. Echocardiography detected a large pericardial exudate and the patient was referred to the Cardiology Clinic in Linköping for a pericardial punction and further investigation. CT chest showed a 24 x 16.5 x 17.5 cm large tumor-suspect mass in the anterior part of thorax and pericardial fluid. The carina and the heart were displaced posteriorly (Figure 1). Ultrasound guided biopsy verified a neuroendocrine tumor, probably typical carcinoid. At the multi-disciplinary conference the resection of the tumor was recommended. The patient was in a good condition and stabile after the pericardial fluid had been removed. We got further information from the patient´s family as he had a weight loss of 10-15 kg in recent years, despite normal appetite, but he had not experienced any symptoms prior to the cold.

Figure 1., Giant mediastinal carcinoid

Intubation with double lumen tube and Clamshell incision in the 4th interstitial space was performed, the mammary vessels were supplied with clips bilaterally. The very large tumor was filling the entire front of the thorax from the jugulum to diaphragm and bilaterally to the lateral chest wall. It was not possible to surround the tumor via only one Clamshell incision that is why the surgical approach was completed with a median sternotomy. After that we could gradually move around the tumor which was broadly attached the pericardium. The tumor was very well vascularized with a number of pathological vessels around. Intrapericardial resection was performed with using of Ligasure instruments, vascular clips and diathermy. The left nerve phrenicus was heavily elongated, but it was outside the tumor capsule so it was possible to preserve it. The right nerve phrenicus stretched through the tumor straight that is why it was impossible to preserve it. The main vascular supply came via wide thymus vessels, both cranially and laterally. The left brachio-cephalic vein, like all mediastinal vessels, was heavily elongated and the brachiocephalic vein went straight into the tumor area, was supplied with vascular ligature, after that we could eventually hold up the tumor from the truncus pulmonalis and from the aorta. The tumor was attached adherently to the right upper lobe in several places, in part we could solve it with diathermy or Ligasure, but in two places we used stapler for wedge section. Centrally the tumor was attached to the vena cava all the way down to the enter to the right atrium. After dissection we could identify the influx of left brachiocephalic

vein which was completely sealed on the tumor capsule. We performed a vascular resection with patch in this area. Thereafter, the tumor was free from great vessels and it was possible to remove the whole mediastinal mass and send to pathology. General hemostasis was done, drain was placed in the left and right pleura as well as in the mediastinum. The sternotomy ended with 8 steel wires and with 2 separate longitudinal cerclages. The thoracotomies ended in the usual way and two subcutaneous drains were placed. The patient got epidural pain management at the time of surgery and we could change to peroral painkillers on the 5th postoperative day. The patient did not have any problem with pain and was discharged on the 8th postoperative day. Histology showed an atypical carcinoid of thymus and radical surgery was performed.

Thereafter, a pancreatic metastasis was found on PET verified by endoscopic ultrasound. The patient was treated with chemotherapy, but progress was detected inthe pancreas and also nodules in the middle lobe. The patient was also discussed at the Endocrine-Oncology Department. A PET CT was performed, which showed uptake in several changes in the pancreas, change in the right lung and one in the right scapula. The patient was treated with Afinitor with a reduced dose due to side effects and the latest CT with stable disease.

Because of the large size of the tumor a complete resection can present many challenges, mostly infiltrative adhesion to structures (nerves, vessels, pericardium, and lungs).

Discussion

1-8 % of the intrathoracic neoplasms develop in the mediastinum, mostly between the fifth and seventh decades. The benign form is more common than the malign [1,2]. The symptoms are usually associated with the tumor´s size, local compression or invasion. Clinical symptoms are observed in 62 % of patients and include chest pain (30 %), dyspnea (16 %), fever and chills (20 %), and cough (16 %). Chest X-ray and CT are the most fundamental examinations for large mediastinal tumors [3,4]. Chest X-ray often shows large areas of dense shadows in the chest, which can be often misdiagnosed as pleural or pericardial effusion. The diagnosis and the planning before surgery is based on chest CT. CT scans can accurately reveal the tumor size, location, and relationship with the surrounding organs. It can not give any information about the tumors genesis. MRI would be more accurate in revealing of vascular and cardiac invasion compared to CT. CT guided biopsy can be indicated if it can change the strategy after discussion in MDT [3].

The surgical approach can be median sternotomy, clamshell incision or combination of these ones. The most popular surgical method is the clamshell incision which can give well access bilaterally but sometimes such in our case it can be difficult to expose the superior part of the anterior mediastinum. It is possible to combine these surgical incisions and in our case there were not any difficulties postoperatively. Combination of median sternotomy with clamshell incision gives a good visual field and good possibilities to perform a radical surgery, for even better visibility especially of the posterior hilum, including the lower lobe [2,3,4].

Due to the mediastinal anatomic variations it is easy to misjudge the structures, leading to wrong resection or surgery difficulty. For good surgical exposure a mediastinal sternotomy and extended neck incision are recommended, particularly for the vena cava branch. Meanwhile it also facilitates the management in case of an emergency situation during surgery. Large tumors can be highly vascularized and blood supply to mediastinal masses cab be highly variable, possibly derived from branches from the internal mammary artery, bronchial arteries, thyrocervical trunk, intercostal vessels, phrenic nerve vessels, pulmonary artery, and even from coronary arteries [3,4]. These large feeding vessels may cause technical and bleeding complications during a surgical resection. A survey among members of the European Association for Cardio- Thoracic Surgery revealed that neoadjuvant therapy was used by

most surgeons in the treatment of thymoma, and is significantly more utilized by high-volume surgeons. Making a histopathological diagnosis through fine needle aspiration or core needle biopsy is important in decision-making in this regard.

Reference:

[1]. Paolo Macchiarini, Helmut Ostertag. Uncommon primary mediastinal tumors. The Lancet Oncology 2004;5(2), 107-118

[2]. Inga-Marie Schaefer, Patrick Zardo, Stefan Freermann, Alexander Marx, Philipp Ströbel, Stefan Fischer. Neuroendocrine carcinoma in a mediastinal teratoma as a rare variant of somatic-type malignancy. Virchows Arch 2013;463:731–735 DOI 10.1007/s00428-013-1476-3

[3]. Michihito Toda, Nobuhiro Izumi, Takuma Tsukioka, Hiroaki Komatsu, Satoshi Okada, Kantaro Hara, Ryuichi Ito, Toshihiko Shibata, Noritoshi Nishiyama. Huge mediastinal liposarcoma resected by clamshell thoracotomy: a case report. Surgical Case Reports 2017;3(16) DOI 10.1186/s40792-017-0291-5

[4]. Wilson W.L. Li, Wim Jan P. van Boven, Jouke T. Annema, Susanne Eberl, Houke M. Klomp, Bas A.J.M. de Mol. Management of large mediastinal masses: surgical and anesthesiological considerations. J Thorac Dis 2016;8(3): 175-184