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Mature cystic teratoma presenting as a solitary pleural tumor with a rudimentary lung – The great masquerader of a young lady – A case report

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Abstract

This report highlights the first case of MCT presenting as a solitary pleural based tumor. A 32 year old lady presented with an abnormal chest X-ray which was done for a medical-checkup. She did not have clubbing or lymphadenopathy. Respiratory examination revealed reduced chest expansion with dull percussion note and absent air entry in the left hemithorax. Chest CT showed a pleural based left sided mass encasing the heart anteriorly with a right sided mediastinal shift. Left sided thoracotomy revealed a well capsulated cystic mass and the entire mass was removed. Histology revealed a mature cystic teratoma which was characterized by the presence of mature cartilage, skeletal muscle, neural tissue, mature adipose tissue and fibro connective tissue in the same tissue sample suggestive of MCT. She had MRC grade 1 dyspnea which has resolved following removal of the mass. She remains symptom free without recurrence for one year.

Keywords

Mature cystic teratoma; pleural mass; thoracotomy.

Abbreviations

MCT: Mature cystic teratoma; CECT: Contrast enhanced Computed tomography; FEV1: Forced expiratory volume in 1st second; FVC: Forced vital capacity.

Introduction

Teratomas are composed of tissues arising from at least two of the three primitive germ layers [1]. A mature cystic teratoma presenting as a solitary pleural based tumor has never been described in the literature. We describe a young lady who was accidentally diagnosed to have pleural based mass lesion leading in to a diagnosis of a mature cystic teratoma.

Case Report

A 32 year old previously well lady was referred to the respiratory clinic, following a medical checkup. She was told to have an abnormal chest X-ray. There was no history of chronic cough or sputum production. She denied having hemoptysis, chest pain, weight loss or loss of appetite. On detailed questioning she was discovered with MRC grade 1 dyspnea, however it did not affect her day to day activities. She was functionally active throughout her life and was involved in athletics during schooling as well.

On examination she was not pale and there was no clubbing or lymph node enlargement. She was hemodynamically stable and had a midline trachea. Respiratory examination revealed reduced chest expansion with dull percussion note and absent air entry in the left hemithorax. There was no organomegaly in the abdominal examination. Initial chest X-ray showed left sided homogenous opacity in the left middle and lower zones with few cavitatory lesions above the homogenous opacity (Figure1). There was mediastinal shift to the opposite side and left hemi-diaphragm was not visualized in the chest X-ray. In addition there was heterogeneous opacification in the right lower zone. It was decided to evaluate her with further imaging and lung function tests.

Subsequent CECT chest showed a left sided pleural based mass lesion extending to the right, encasing heart anteriorly with a mediastinal shift to the right (Figure 1). There were some hypoechoic lesions in the mass suggestive of central necrosis. Further evaluation with lung functions showed a restrictive lung defect (FVC – 43%, FEV1 – 39%, FEV1/FVC – 98%) with a DLCO value of 52%. TB screening was negative and her complete blood count, inflammatory markers, renal and liver functions were normal. A probable diagnosis of solitary pleural fibroma was suspected after detailed imaging.

As there was a mass lesion with a mediastinal compression it was decided to subject her for a thoracotomy and remove the tumor. During thoracotomy it was found to have a pleural based lobulated and a capsulated mass lesion measuring 260 mm X 200 mm X 130 mm and a tumor weighing 4.2 Kg was removed (Figure 2). Following removal of the tumor rudimentary lung was visible. Histology of the mass showed a cystic teratoma with areas of mature cartilage, skeletal muscle, neural tissue, mature adipose tissue and fibro-connective tissue (Figure 2). There were no immature elements, invasive carcinoma or any other germ cell components. Since the mass was completely excised and there were no immature elements it was decided to follow her up closely. Following surgery her FVC rose to 53% and after 6 months of surgery it has gone up to 67% and her dyspnea improved. She is living a normal life with regular clinic supervision.

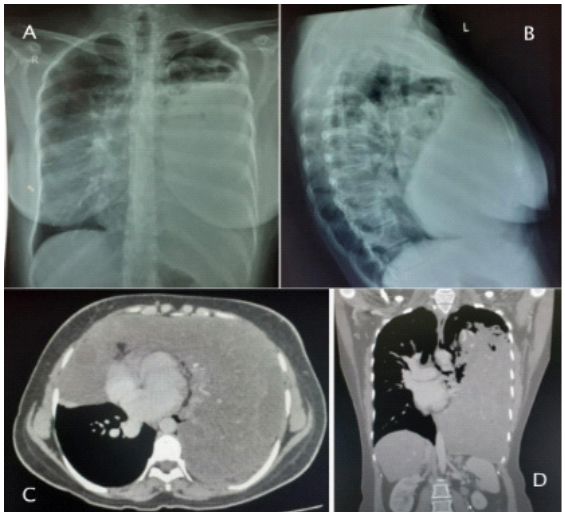

Figure 1: A,B - CXR-PA and lateral showing homogenous left sided lesion causing mediastinal shift to the opposite side. C,D - CECT chest showing left sided pleural based lesion extending to the right encasing the heart anteriorly with contralateral mediastinal shift

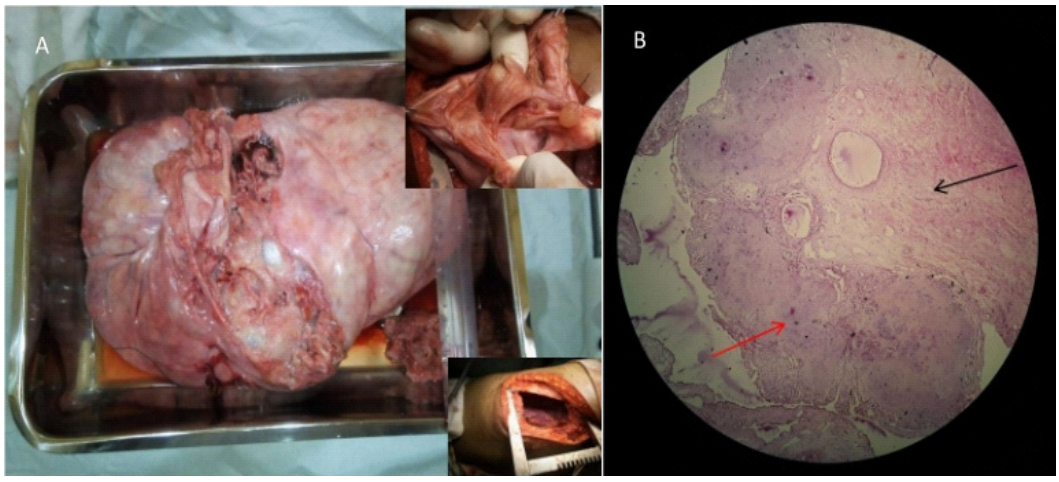

Figure 2: A – Excised mass which was well encapsulated and cystic in nature. Rudimentary lung was visible following excision of the lesion, B - Microscopic appearance of the lesion showing areas of mature cartilage (red arrow), skeletal muscle, neural tissue, mature adipose tissue and fibroconnective tissue (black arrow). There were no immature elements, invasive carcinoma or any other germ cell components.

Discussion

Teratomas are the commonest germ cell tumor and mediastinum is the second commonest organ to be involved after gonads. The component tissues in a teratoma range from immature to well differentiate and are foreign to the anatomic site in which they are found. Mature cystic teratoma can present as mediastinal lesions and it can get associated with certain complications which cause presentation to the clinician. This includes compression/invasion of intra thoracic adjacent structures, perforation into the pleural cavity, pericardial sac and bronchus leading to effusion, potentially life-threatening pericardial effusion and massive haemoptysis respectively [1,4]. Mature cystic teratoma presenting as a solitary pleural based tumor has never been described in the literature, which makes this case extra-ordinary. Patient was not symptomatic as it was a long term disease with gradual increase in size. When the patient was presented to us the lesion had extensive progression with a mediastinal shift and encasement of the heart without infiltration. Unfortunately this patient had undergone a normal vaginal delivery 2 years back without being diagnosed of the lesion. Careful and meticulous complete resection is the goal of treatment for mature cys-

tic teratomas and fortunately the task was relatively easy as the lesion was encapsulated without invading adjacent structures [5]. There is a 1-2% risk of malignant transformation of a mature cystic teratoma highlighting the importance of excision [2]. Certain risk factors are associated with malignant transformation and this include age >45 years, tumors more than 10 cm, rapid growth and SCC antigen level >2 ng/ml [3].

Most of the teratomas are seen involving the gonads and out of them ovaries are commonly affected. It accounts for 20% of all ovarian tumors and therefore most of the descriptions and evidence are from the analysis of ovarian tumors. Pathologically these tumors are pleuripotent and divided into sub-categories such as mature cystic teratomas, immature teratomas, monodermal teratomas, carcinoid tumors, neuroectodermal tumors and fetiform teratomas [6,7]. MCT is the commonest and it consists of two well differentiated mature germ cell layers. Mature tissues seen in the skin, hair, fat, muscle are usually seen as components as ectoderm and mesoderm are commonly contributed for the formation of the tumor [6].

MCT constitutes a spectrum of radiological presentation in imaging ranging from a mass with almost a solid component to pure cystic mass. Some radiological signs such as tip of the iceberg sign, comet tail appearance, floating ball sign and dot-dash sign are used for sonographic identification of teratomas. However these are described in the diagnosis of ovarian tumor and diagnostic utility in thoracic teratomas are limited. MCT are commonly seen in women in their reproductive age group and it was also seen in children and postmenopausal women to a lesser extent. Most of the cases are asymptomatic and present with compression of adjacent structures or vague pain or as an accidental diagnosis. Management should be tailored, based on individual characteristics and surgery is often warranted in a case with complications [9].

Conclusion

Mature cystic teratoma presenting as a pleural based lesion is an extremely rare phenomenon. Careful and meticulous complete resection is the goal of treatment.

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Author contribution

Sugeesha Wickramasinghe – Literature review, gathering data and writing the article.
Sujeewa Ilangamge – Reviewing the article before submission and guiding its intellectual content.
Sumana Handagala - Reviewing the article before submission and guiding its intellectual content.
Sumudu Palihawadene - Reviewing the article before submission and guiding its intellectual content.
Ramani Punchihewa - Reviewing the article before submission and guiding its intellectual content.
Saman Kularatne - – Literature review, gathering data and writing the article.

Disclosure statement

Appropriate written informed consent was obtained for publication of this case report and accompanying images

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