

Mass Effect: A Case Report on Sudden Death due to Thymoma

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Abstract

Thymomas are rare in children. Most of them are asymptomatic and found incidentally on chest radiographs. In literature there are very few number of deaths reported due to the compressional effect of a Thymoma on the lungs. We present a case of a 14 year old girl, who died suddenly following an acute onset chest pain and dyspnoea. The autopsy revealed a mediastinal mass which encroached upon and compressed the Lungs causing respiratory failure and death. Further, Histopathological examination revealed the mass to be a Thymoma B1 (WHO classification).

Keywords: Thymoma; Sudden death; Mediastinal mass; Respiratory failure.

Introduction

The thymus is a lymphoid organ located in the anterior mediastinum. In early life, the thymus is responsible for the development and maturation of cell mediated immunological functions. The thymus is composed predominantly of epithelial cells and lymphocytes. It reaches its maximum weight at puberty and undergoes involution thereafter.[1]

Thymoma is a rare tumor stemming from the epithelial cells of the thymus.[2,3] It mostly presents in the fourth and fifth decades of life and less than 10% of Thymomas are diagnosed in patients younger than 20 years of age.[4] Thymic neoplasms constitute about 15% of anterior mediastinal masses in children with thymomas being the most common one.[5]

Sudden deaths due to an enlarged thymus or thymic tumors encroaching upon and

compressing the trachea and/or one or both atria have been reported.[6,7,8] The present report describes the sudden death of a young girl due to the compressional effect of Thymoma on both the Lungs.

Case report

A 14 year old girl suffered from an acute attack of chest pain and breathlessness in the middle of the night. There was considerable delay arranging transport owing to the odd hour of occurrence during which the symptoms worsened, rendering her unconscious. On arrival at the nearest hospital, she was declared 'Brought Dead'.

A Medico-legal autopsy was ordered by the Investigating officers to confirm the cause of death and the body was brought to our Institution.

Further enquiry into the girl's past medical history (Informant - mother) revealed that she had been having occasional chest pain, dyspnoea, cough and fever in the last 6 months. She had been shown to a physician a couple of times but physical examination, chest radiogram and blood investigations revealed no significant abnormalities. We also learnt that she was apparently healthy in the last few days.

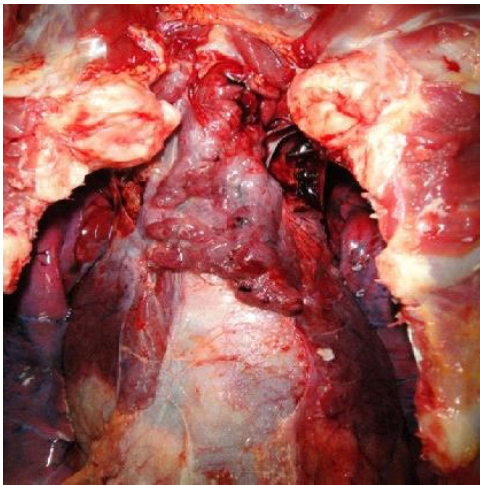
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Fig 1: Gross appearance of the mediastinal mass encroaching upon the lungs



Post mortem examination

External findings

- She Measured 155 cms in length, moderately built and nourished.
- Rigor Mortis was present throughout the body.
- Purplish blue lividity was present over the back of the body.
- Lips and nail beds were cyanosed.
- No injuries were present on the body.

Internal findings

- A Mediastinal mass [extending from the lower part of the neck to the upper part

Fig 2: A Portion of the mediastinal mass adherent to the sternum



of middle mediastinum] measuring 15x15x7cms was present partly covering the lungs and the heart. The mass was firm to touch, a portion of which was adherent to the sternum. Cut surface exuded dark colored fluid blood. [Fig 1 & 2]

- Both Lungs were Oedematous and exuded frothy blood.
- Heart was congested. Coronaries were patent and Valves were Normal.
- Other Visceral organs were congested and unremarkable on gross examination.

Histopathological findings

- Examination of the mass revealed the typical picture of a Thymoma B1[Lymphocytic Rich, WHO classification]
- Sections of the lungs showed marked pulmonary oedema with haemorrhages at places and peribronchiolitis.
- Sections of Liver showed Tubercular granulomatous hepatitis.
- Analysis of the other organs ruled out pathological alterations.

Chemical and Toxicological examination ruled out the intake of exogenous toxic substances.

In view of the autopsy and Histopathological findings, cause of death was opined as Respiratory Failure as a result of Compression of Both lungs by Mediastinal mass [Thymoma].

Discussion

Thymoma is rare in childhood. Very few cases of sudden deaths due to the compressional effects of Thymoma have been reported in literature. It is the most common

neoplasm of the anterior mediastinum and accounts for 20-35% of all mediastinal tumors and 50% of all anterior mediastinal masses. Patients with a Thymoma one-third to one half are asymptomatic and one-third of patients present with local symptoms related to tumor encroaching on surrounding structures. These patients may present with cough, chest pain, superior vena cava syndrome, dysphagia and hoarseness of voice if the recurrent laryngeal nerve is involved. One-third of cases are found incidentally on radiographic examinations during a workup for Myasthenia gravis.

Children are more likely than adults to have symptoms. The proposed explanations for the prevalence of symptoms in children are as follows:

1. Children are more likely to have malignancy
2. Lesions are more likely to cause symptoms by compression or invasion in the smaller thoracic cavity of a child.
3. The most common location is near the trachea resulting in respiratory symptoms.[8]

An enlarged thymus or Thymoma when not specifically searched for is generally found on routine radiograms of chest presenting as a mediastinal mass. Thymomas are often not detectable, however, on Antero-posterior radiograms, though easily seen in side views.[9] An enlarged thymus or Thymoma may exert pressure on the trachea thus causing respiratory disturbances of all grades of severity.[10] This complication however on rare occasions causes death and some cases reported occurred in the younger age groups.[6,7]

In the case presented above it is clear that the terminal symptoms; chest pain and breathlessness were directly related to the pressure effect of the Thymoma.

Conclusion

It is a common practice by most physicians to investigate only the Antero-posterior radiogram of the chest when presented, especially with mild to moderate respiratory symptoms. In rare scenarios, like in the discussed case, the physician when presented repeatedly with the same symptoms, should be aware and suspect the likelihood of a mediastinal mass. In addition to the Antero-posterior radiogram, a lateral radiogram of the chest may provide a higher chance of detecting the mediastinal mass. In conclusion the history and autopsy finding in our case suggests a sudden apparent expansion of the tumor causing death.

References

1. Thymoma. <http://emedicine.medscape.com/article/193809-overview> accessed on 21-04-2013
2. Kondo K. Optimal therapy for thymoma. *J Med Invest.* 2008; 55: 17-28.
3. Temes R, Allen N, Chavez T, *et al.* Primary mediastinal malignancies in children: report of 22 patients and comparison to 197 adults. *Oncologist.* 2000; 5: 179-184.
4. Pappo AS, Rodriguez-Galindo C, Furman WL. Management of infrequent cancers of childhood. In: Pizzo PA, Poplack DG, eds. *Principles and Practice of Pediatric Oncology.* 6th ed. Philadelphia: Wolters Kluwer/ Lippincott Williams & Wilkins Health; 2011, 1103-1104.
5. Giolda BT, Peng R, Coleman JL, *et al.* Treatment of early stage thymic tumors: surgery and radiation therapy. *Curr Treat Options Oncol.* 2008; 9: 259-268.
6. Carr JL. Status Thymico-Lymphaticus. *J Pediat.* 1945; 27(1).

7. Rabson SM. Sudden and Unexpected Natural Death. *J Pediat.* 1949; 34: 166.
 8. Yang KM, Choi CH, Kwon TJ, Lee HY, Kang SM, Chung NE. Mechanical Asphyxia Caused by Thymoma. *Korean J Leg Med.* 2006; 30(1): 82-85.
 9. Thymoma <http://emedicine.medscape.com/article/193809-overview#a0199> accessed on 21-04-2013.
 10. Jamplis RW, and Cressman RD. Current Concepts of Thymomas. *Amer J Surg.* 1959; 98: 202.
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