The Asymptomatic Mediastinal Mass in A Child Incidentally Found at the Preoperative Radiological Screening: Case Report

Preoperatif Radyolojik İncelemede Tesadüfen Bulunan Asemptomatik Mediastinal Kitle

Fulya ÖZER,[a]
Esra ÇALIŞKAN[b]

Departments of
[a]Otorhinolaryngology Head and Neck Surgery,
[b]Anesthesiology and Reanimation,
Başkent University Faculty of Medicine, Ankara

Geliş Tarihi/*Received:* 13.03.2014
Kabul Tarihi/*Accepted:* 30.09.2014

Yazışma Adresi/*Correspondence:*
Fulya ÖZER
Başkent University Faculty of Medicine, Department of Otorhinolaryngology Head and Neck Surgery, Ankara, TÜRKİYE/TURKEY
fdeveci06@hotmail.com

ABSTRACT We report the case of 4-year-old boy with the huge left paramediastinal mass incidentally found during preoperative investigations for tonsilloadenoidectomy and the histopathology was confirmed as mediastinal ganglioneuroma. Chest X-Ray is not routine preoperative test especially in childhood according to ASA guidelines. However, preoperative evaluation of patients before the surgery according to some guidelines may cause lack of attention for some of diseases rarely. The decision of the variety of the preoperative tests should be re-designed for every patient.

Key Words: Ganglioneuroma; child; mass chest X-ray; preoperative period

ÖZET Tonsilloadenoidektomi yapılması planlanırken, preoperatif incelemeler sırasında rastlantısal olarak büyük bir paramediastinal kitle tespit edilen ve histopatolojisi mediastinal ganglionöroma rapor edilen 4 yaşındaki bir erkek hasta sunulmuştur. Akciğer grafisi, ASA kriterlerine göre özellikle çocukluk çağda rutin yapılan bir preoperatif test değildir. Ancak, bazı algoritmalara göre cerrahi öncesi hastalara uygulanan preoperatif değerlendirme, nadir olarak bazı hastalıkların atlanmasına neden olabilir. Preoperatif testlerin çeşitliliğinin kararı, her hasta için yeniden düşünülmelidir.

Anahtar Kelimeler: Ganglionörom; çocuk; mass göğüs grafisi; ameliyat öncesi dönem

Turkiye Klinikleri J Case Rep 2016;24(1):1-4

Pre-operative preparation is an important component of pre-anesthetic assessment before the elective Ear Nose Throat surgery.[1] These widely used tests are categorized into two groups according to American Society of Anesthesiologists (ASA) Task Force on Preanesthesia Evaluation (2002); routine or screening tests and indicated or diagnostic tests.[2] Many retrospective and prospective studies have documented that preoperative routine or screening tests occasionally find pathology in asymptomatic patients and the abnormal results of these tests rarely change the perianesthetic management or outcome.[1,3] However, some of the problems such as subacute Myocardial Infarct, Hepatitis B and C, HIV and anemia could be detected unexpectedly with these preoperative investigations. Here, we present a case with ganglioneuroma of the posterior mediastinum found incidentally at the preoperative preparation of adenotonsillectomy.

doi: 10.5336/caserep.2014-39678

CASE REPORT

A four years old boy presented to our clinic with nasal obstruction and snoring for six months. The otorhinolaryngological examination showed the obstructed big adenoid tissue at the nasal endoscopy and hypertrophic tonsils (+3) at the oral exam. His physical examination was otherwise unremarkable. Adenotonsillectomy was advised to him during follow up. Although chest X-ray is not used as a preoperative preparation of patients under 35 years old in our clinic, chest X-ray was ordered from this patient mistakenly with other routine laboratory tests. Chest X-ray showed a homogenous soft tissue density mass in left paramediastinum with smooth borderline (Figure 1). There were no specific symptoms such as dyspnea, cough, pain, hypertension or diarrhea. Laboratory data were unremarkable. Thorax Magnetic resonance imaging (MRI) showed a solid mass localized at the posterior mediastinum. After obtaining the pathological result of computed tomography (CT)-guided biopsy as ganglioneuroma, surgery was planned by pediatric surgeons for resection of the tumor at the same time with adenotonsillectomy.

Anesthesia was induced with thiopental 5 mg/kg, and fentanyl 1 μg kg^{-1} IV. During the induction period mask ventilation resulted in adequate oxygenation without any sign of airway obstruction. After adequate muscle relaxation was obtained with vecuronium 0.1 mg/kg, the trachea was intubated with a 4.5 mm cuffed endotracheal tube, and ventilation was controlled. During insertion of the endotracheal tube, no mechanical resistance was observed. Additional invasive arterial blood pressure, blood gas analysis and central venous monitorization were obtained following intubation. Anesthesia was maintained with a continuous IV fentanyl infusion 2 μg $kg^{-1}h^{-1}$ and 1.0% MAC isoflurane. Extubation and awakening of the patient was uneventful. The child was hemodynamically stable throughout the perioperative period. The resected firm and capsulated mass measuring 8.5x8x8.5 cm was sent for histopathological examination. The end pathological result was ganglioneuroma with tumor-free margins. There was no recurrence at the postoperative follow- up with 2 years.

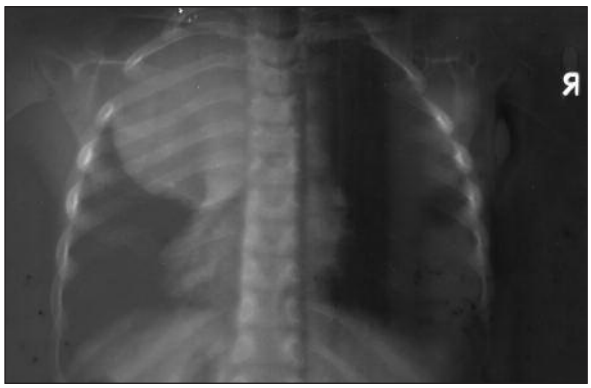

FIGURE 1: Chest X-ray showed a homogenous soft tissue density mass in left paramediastinum.

DISCUSSION

The topics about preoperative routine evaluation have been popular in anesthesia and other surgical departments in the last years.[4] Evaluation of patients before surgery is important component of perioperative period and some guidelines about preoperative assessment are developing to improve safety of the operation and the patient.[5] However, in the last years, many investigations showed that the variety and the time of the preoperative routine tests did not alter the end results of operation and the morbidity of the patient.[6] The huge prices for these routine preoperative investigations also evoked the hospitals to reduce the tests. Because of medico-legal problems of such an approach, ASA Task Force on Preanesthesia Evaluation (2002) recommends selective testing on clinical evaluation and risk assessment and reduces consultations, delays and cancellations on the day of the surgery.[2] In accordance with this society, healthy patients of ASA physical status I and II may need no routine investigations for minimally invasive surgery.[1,2]

Although routine tests of healthy patients are thought unnecessary costs, some of the professionals involved in surgical care of patients continued doing preoperative investigations.[3,5,6] In this way, some of them even found a few abnormal results that affect the patients' quality of care.[3] In this

paper, the diagnosis of asymptomatic ganglioneuroma of the patient was found accidently during preoperative investigations before tonsilloadenoidectomy and the patient has operated because of this thoracic mass. This situation was very surprising to the patient's family because they expected only tonsillectomy and adenoidectomy. However, their son's thorax was opened and severity of surgery became high.

Ganglioneuromas are benign uncommon neurogenic tumors arising from sympathetic ganglia in the posterior mediastinum and can remain asymptomatic for a number of years, to be discovered incidentally on a chest radiograph. Mediastinal neurogenic tumors are more common in infants and children and most of them are malignant.[7] Although the histology of ganglioneuroma is benign nature and differs clearly from other neurogenic tumors, an association of ganglioneuroma and malignant neuroblastoma can be possible.[8] Some uncommon symptoms can be seen as a result of its mass effects such as chest pain and cough. In rare cases, the tumor is hormonally active and hypertension, flushing, diarrhea can be seen due to catecholamines discharge.[8] Mediastinal ganglioneuromas, although benign, can grow aggressively and invade mediastinal structures and spine. The only treatment of these tumors is surgical removal. Postoperative hypertension can be seen especially in big mass and need medication for a long time.[7,8]

The abnormal findings of chest X-ray in asymptomatic patients ranged between 2.5% and 37%. However, the pathological findings which could alter anesthetic management and surgical planning were rare (5.1%).[5] Furthermore, radiation exposure in childhoods is of particular concern because children have immature developing organ and tissue structures. These factors, as well as the potentially longer lifespan of children may significantly increase lifetime cancer risk.[9] However, the average radiation dose of a child during chest antero-posterior and lateral X-ray is as low as 0.03-0.08 mSv.[10] So that, cumulative radiation exposure and associated lifetime cancer risk estimation will be lower for healthy child with only chest-X-ray.[9]

ASA Task Force on Preanesthesia Evaluation (2002) did not recommend chest X-ray before anesthesia except extremes of age, smoking, stable COPD or cardiac disease and say that only blood count is enough for the anesthesia of children.[2] However, before any operation the detail physical examination and making laboratory tests are important in the developing countries where the children can't be controlled and examined routinely. In these countries especially in the areas with low socio-economic status, any surgical operation with anesthesia can be good opportunity for routine control of these poor patients. By this way, the rare conditions in the patients like ganglioneuroma can be found and treated. Therefore, if the patients have not any laboratory tests, chest X-ray, electrocardiography (ECG) and physical examination in last 6-8 months, we may get out rules before the anesthesia and may apply some extra examinations such as chest X-ray, ECG or some laboratory tests.

As a conclusion, there is a very fine line between unnecessary expensive investigations of a patient known healthy and the routine investigations that revealed the thoracic mass which might be malignant. The formulation and the decision of guidelines about preoperative assessments show that preoperative medicine will keep wide space as a sub-speciality in the future.

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