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OLGU SUNUMU / CASE REPORT

Spontaneous resolution of pneumomediastinum in two newborn babies

İki yenidoğan bebekte pnömomediyastinumun kendiliğinden düzelmesi

Hacer Yapıcıoğlu Yıldızdaş[1], Önder Özden[2], Hilmi Serdar İskit[2], Gülseren Bilen Yurdakul[3], Mustafa Akçalı[1], Ferda Özlü[1], Süreyya Soyupak[1], Mehmet Satar[1], Nejat Narlı[1]

[1]Çukurova Üniversitesi Tıp Fakültesi, Neonatoloji Bilim Dalı, [2]Çocuk Cerrahisi Anabilim Dalı, Adana, Turkey
[3]Adana Özel Algomed Hastanes, Pediatri, Adana, Turkey

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Abstract
Pneumomediastinum is due to air penetration in to the mediastinum. In children it is mostly due to asthma, however in newborns pneumonia or meconium aspiration syndrome are the predisposing factors. Pneumomediastinum is recognised by chest radiography, in newborn babies -spinnaker sign- an upwards and outwards deviation of thymic lobes can be seen due to raising of thymus above the heart by pneumomediastinal air. Babies may be asymptomatic or they may have respiratory distress. Pneumomediastinum usually resorbs spontaneously over one or two weeks. Here we report two newborn babies with pneumomediastinum. Although pneumomediastinum was obvious in the chest X-rays, both babies had mild respiratory distress and mediastinal air resorbed spontaneously.
Key words: Pneumomediastinum, Diagnosis, Newborn

Öz
Pnömomediastinum mediastene hava girişi ile oluşmaktadır. Çocuklarda genellikle astıma bağlıdır, ancak yenidoğanlarda pnömoni veya mekonyum aspirasyon sendromu predispozan faktörlerdir. Pnömomediastinum tanısı genellikle akciğer grafisi ile konur, yenidoğan bebeklerde pnömomediastinal hava ile kalbin üstündeki timik lopların yukarı ve dışa doğru sapmasıyla timusun yükseldiği yelken işareti görülür. Bebekler asemptomatik olabildiği gibi solunum sıkıntısına da neden olabilir. Pnömomediastinum genellikle bir veya iki haftada kendiliğinden resorbe olur. Burada pnömomediastinumlu iki yenidoğan bebek sunulmuştur. Her iki bebeğin göğüs filminde belirgin pnömomediastinum olmasına rağmen, solunum sıkıntısı orta düzeyde idi ve mediastinal hava spontan resorbe oldu.
Anahtar kelimeler: Pnömomediastinum, Tanı, Yenidoğan

INTRODUCTION

Pneumomediastinum (PM) is due to air penetration in to the pulmonary interstitium after alveolar rupture and air dissection through the bronchovascular sheath in to the mediastinum. It is rare and mostly seen in male adults aged 20-40 years old. In adults, predisposing factors are asthma and chronic obstructive pulmonary diseases and precipitating factors are emesis, vomiting, cough, defecation, physical exercise, labor, upper airway infection, rapid ascent in scuba diving and iatrogenic injuries from endoscopy or surgery[1]. In children, PM is often secondary to asthma and the rate of PM among children for emergency treatment of asthma is 0.3-5 percent[2]. In newborns positive pressure ventilation, pneumonia or meconium aspiration syndrome are the predisposing factor[3]. However it may occur spontaneously. In spontaneous PM, lung is healthy and PM is atraumatic. In spontaneous PM, the pressure gradient between alveoli and pulmonary interstitium is thought to be generated by excessive intrapleural pressure during vigorous breathing[4]. Pneumomediastinum usually resorbs over one or two weeks and treatment is generally observation[5]. Here we report two newborn babies with PM and their progress in neonatal intensive care unit (NICU).

CASE 1

The female baby was born at 35 gestational age via

Yazışma Adresi/Address for Correspondence: Dr. Mustafa Akçalı, Çukurova Üniversitesi Tıp Fakültesi, Neonatoloji Bilim Dalı, Adana, Turkey. E-mail: akcali_mustafa@hotmail.com
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cesarian section. She was 2555 g. Apgar scores were 8 and 9 in the first and fifth minutes. She did not need resuscitation at birth and admitted to NICU for prematurity and respiratory distress. Her physical examination was normal except for grunting and mild respiratory distress. Nasal Continous Positive Airway Pressure (NCPAP) was applied.

Her first chest X-ray was normal. Ampicillin and gentamycine were started for prolonged rupture of membranes. The second chest X-ray in the first day of life showed PM and serial X-rays and chest computed tomography (CT) showed PM for 2 weeks (Figures 1a-b). She had no respiratory distress on the 3rd day and NCPAP was stopped. Pneumomediastinum resolved after 2 weeks. She was discharged on the 15th day of life when she was orally fed and PM was dissolved.

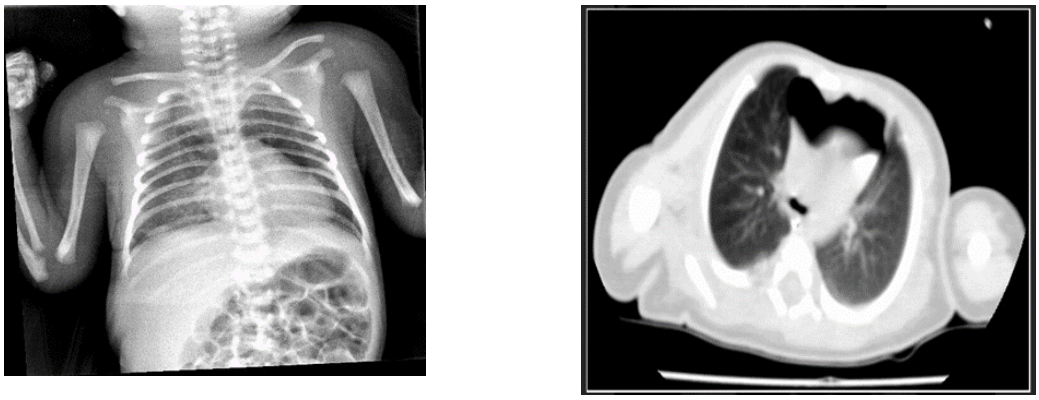

Figure.1a-b. Pneumomediastinal air in chest X-ray and loculated air in thorax CT of the first patient

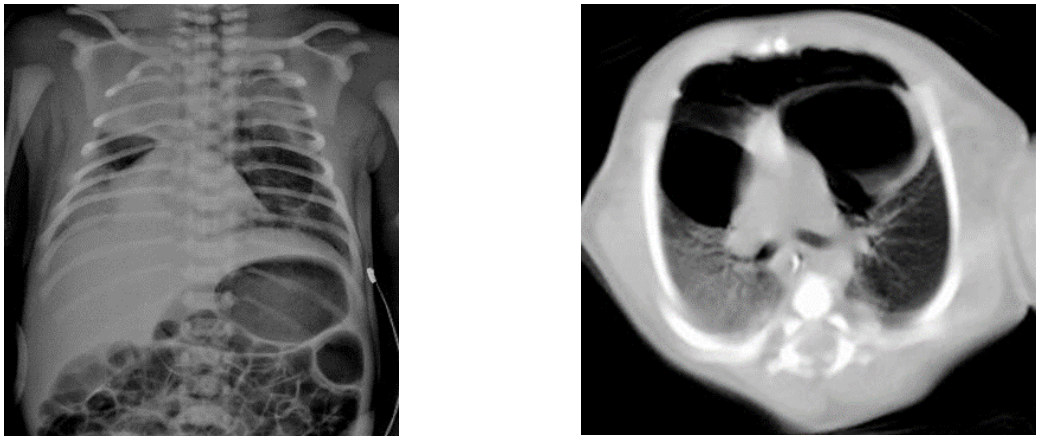

Fig.2a-b: Pneumomediastinal air raising thymus in chest X-ray and loculated air in thorax CT of the second patient

CASE 2

The male baby was born at 38 gestational weeks by cesarian section with Apgar scores 9 and 10. He did not need resuscitation in the delivery room. However after one hour he had respiratory distress and admitted to NICU. He had respiratory acidosis. His body weight, length and head circumference were within normal limits. He had crepitan ralles in his lung examination. Nasal Continous Positive Airway Pressure was applied for respiratory distress. Chest radiography in the first hour of admission was suspicious for cystic adenomatoid malformation (Figure 2a), however thorax CT showed PM (Figure 2b). Serial chest X-rays showed PM. Although patient was stable after one week and NCPAP was stopped, he had feeding problems, he was orally fed when he was 3 weeks old. After 3 weeks, he still had

PM in X-rays. As respiratory distress did not worsen, he did not need drainage for PM. When he was one month old, X-ray was normal.

DISCUSSION

Spontaneous PM is uncommon in children. Incidence varies between 1 in 800 and 1 in 42.000 adult and pediatric patients[6,7]. In a retrospective study reviewing all records of children diagnosed as PM in neonatal and pediatric intensive care units (PICU) in a university hospital in Switzerland in a 6 years of time, there were 7 children and 9 neonates. The incidence of PM was found to be 0.08% for children (older than 4 weeks) and 0.1% for neonates. All of the newborns were vigorous at birth and did not need resuscitation. 6 of 7 children had an underlying cause (2 trauma, 3 infection, 1 sport in children). The children older than 4 weeks were observed in PICU for a mean of 3.2 days. 4 of 9 neonates had underlying factors such as premature lungs (2 newborns), pulmonary infection (1 newborn) and Valsalva manoeuvre (1 newborn with convulsion). Neonates in this study were observed in NICU for 3-13 days (mean 5.6 days) depending on the severity of the underlying diseases[8]. Of our patients, the first patient had prematurity and respiratory distress, however the second case had no underlying disease. We have observed our patients for 2 and 3 weeks as they had feeding problems and as we want to monitor patients for respiratory compromise.

Pneumomediastinum is characterized by chest pain, subcutaneous emphysema, cardiac dullness, crepitant sound on heart and lungs, evidence of increased mediastinal pressure, dyspnea and cyanosis in adults[9]. Respiratory distress may be the leading finding in newborns. Pneumomediastinum is diagnosed by chest radiography. In newborn babies an upwards and outwards deviation of thymic lobes can be seen due to raising of thymus above the heart by pneumomediastinal air (spinnaker sign). Spinnaker sign is significant in the second patient (Fig.2a). Thorax CT is not routinely recommended for PM diagnosis, but we have performed CT scans to the patients, especially for suspicious cystic ademato id malformation in the second patient. Similar to our cases, literature also shows that clinicians mostly had thorax tomography for the definite diagnosis[10,11]. Once diagnosis is confirmed by chest radiography or CT, patients should be admitted for monitoring respiratory distress. If there is a tension pm or pneumothorax, a chest tube is recommended. We did not need drainage for PM in both patients. Pneumomediastinum is generally a benign condition in adults. However there is little evidence in newborn babies. We have observed full resolution of PM in 2 and 3 weeks period, they did not have respiratory distress after 3 and 7 days. Recurrence of PM is rare[12,13]. Our patients are now 14 and 2 months old. They are observed in outpatient clinic and healthy.

In conclusion PM is rare in newborn babies. We have seen that PM resorbed spontaneously and did not occur again. However newborns should be observed closely for cardiorespiratory compromise and air leak during hospitalization.

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