SPONTANEOUS PNEUMOTHORAX IN PEDIATRIC AGE GROUP

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INTRODUCTION

Pneumothorax: The presence of air within the pleural space

- Spontaneous
- Traumatic
- Primary
- Secondary
- Neonatal
<table>
<thead>
<tr>
<th>Chest radiograph</th>
<th>Thorax CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ White visceral pleural line</td>
<td>➢ Indicates complex disease processes</td>
</tr>
<tr>
<td>➢ Loss of lung markings</td>
<td>➢ Helpful for distinguishing a pneumothorax from</td>
</tr>
<tr>
<td></td>
<td>large bullae</td>
</tr>
<tr>
<td>➢ The deep sulcus sign in the costophrenic sulcus on a supine radiograph</td>
<td></td>
</tr>
</tbody>
</table>
The aim of this presentation is to describe the etiological factors of spontaneous pneumothorax in pediatric patients.
MATERIAL AND METHODS

➢ The radiology archives between 2007-2018 years

➢ Demographic characteristics, presence of underlying lung diseases, chest X-ray and CT findings were evaluated

➢ 89 patients had pneumothorax

➢ Traumatic, iatrogenic, and surgical causes were excluded
RESULTS

- 43 patients
  - 34 boys, 9 girls
  - age 1 day - 17 years
    (mean age 11.2 years)

<table>
<thead>
<tr>
<th>Spontaneous pneumothorax</th>
<th>(n=)</th>
</tr>
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<tbody>
<tr>
<td>Primary Pneumothorax</td>
<td>22</td>
</tr>
<tr>
<td>Secondary Pneumothorax</td>
<td>15</td>
</tr>
<tr>
<td>Neonatal Pneumothorax</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
</tr>
</tbody>
</table>
RESULTS

Primary Pneumothorax

22 patients; 19 boys, 3 girls
age 4-17 years, mean age 15.2 years
with underlying no disease
<table>
<thead>
<tr>
<th>Etiologies of Secondary Pneumothorax (%)</th>
<th>(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airway Diseases (46%)</strong></td>
<td></td>
</tr>
<tr>
<td>Emphysema</td>
<td>3</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>2</td>
</tr>
<tr>
<td>Bronchiolitis Obliterans</td>
<td>2</td>
</tr>
<tr>
<td><strong>Infectious Lung Diseases (27%)</strong></td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td>4</td>
</tr>
<tr>
<td><strong>Intertitial Lung Diseases (20%)</strong></td>
<td></td>
</tr>
<tr>
<td>Idiopatic Pulmonary Fibrosis</td>
<td>2</td>
</tr>
<tr>
<td>Histiocytosis</td>
<td>1</td>
</tr>
<tr>
<td><strong>Connective Tissue Diseases (7%)</strong></td>
<td></td>
</tr>
<tr>
<td>Marfan’s Syndrome</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
</tbody>
</table>
RESULTS

**Neonatal Pneumothorax**

3 patients respiratory distress syndrome

1 patient meconium aspiration syndrome

1 patient pneumonia

1 patient elective caesarean section
RESULTS

➢ All patients had chest X-ray

➢ 22 patients had CT examination

➢ 5 of 43 patients had bilateral

➢ 22 patients had right-sided

➢ 16 patients had left-sided

➢ 1 patient had air in the spinal canal and mediastinum

➢ 3 patients had emphysema in the subcutaneous tissues
RESULTS

- 13 patients had subpleural air cyts (size 3-36 mm, one to nine cyts) on apices-upper lobes of lungs detected on CT
- Cysts were commonly bilateral (62%)
- 8 patients had subpleural air cyts with primary spontaneous pneumothorax
RESULTS

➢ Recurrences

9 patients with primary pneumothorax

3 patients with secondary pneumothorax
(1 patient with cystic fibrosis, 2 patients with emphysema)
RESULTS

➢ *Cigarette smokers*

5 patients with primary pneumothorax

1 patient with secondary pneumothorax
Case 1
16 y, boy
Case 2
3 y, girl
Case 3
5 y, girl
Case 4
6 y, boy
In children, it is believed that spontaneous pneumothorax is caused by the rupturation of apical subpleural cysts. It is thought that cysts occur with the rupturation of an alveolus, that cause air dissecting into the interstitium and a pocket under the visceral pleura.

Intrathoracic pressure and alveoli volumes are greater in the lung apices so the mechanical stresses are greater in these areas than the other sides.
DISCUSSION

➢ Chronic obstructive pulmonary disease is the most common lung disease causing secondary pneumothorax, accounting for around 57% of cases.

➢ In our study, airway disease was the most common cause of secondary spontaneous pneumothorax around 46% of cases.
DISCUSSION

➢ Literature showed the rate of recurrences approximately 40-60% in different pediatric studies

➢ In our study recurrences rate was 28%
LIMITATIONS

➢ Relatively small study group

➢ Only radiology archives were analyzed
CONCLUSION

➢ Pneumothorax is a common clinical problem in pediatric patients and may be due to different etiological factors

➢ To identify the etiological factors in these patients may help clinicians to reduce the risk of recurrence and to decide the treatment strategies

➢ Radiologists should particularly pay attention to the lung apices-upper lobes on CT
THANK YOU...  KIITOS...