

Image Diagnosis: Interesting Chest Radiographs from the Emergency Department

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Figure 1. Left upper lobe pneumonia

Lobar pneumonia seen on chest x-ray results in a somewhat homogenous opacification of the lung with ill-defined margins.¹ Air bronchograms are present in the image on the left. The lateral film demonstrates decreased retrosternal clear space and increased opacity at the level of the aortic arch (image on right).



Figure 2. Right middle lobe pneumonia

A “silhouette sign” is present when an infiltrative process lies adjacent to a solid organ or tissue, such as the heart or diaphragm. This is seen as the loss of the right heart border in the image on the left. Margins are well defined where the consolidation abuts an interlobar fissure.² Both images demonstrate an opacity overlying the heart and a pronounced right oblique fissure.

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Figure 3. Rib fractures, right

This chest x-ray in a patient who fell 15 feet demonstrates mildly displaced right third and fourth lateral rib fractures, a displaced right clavicle fracture, and a widened mediastinum. Rib fractures can be subtle (or nonexistent) findings on chest radiograph, and point tenderness with pleuritic chest pain should be considered a rib fracture despite a lack of radiologic evidence. Dedicated rib views seldom add relevant clinical information. In children, greater force is required to fracture a rib because of increased compliance. Thus, children may have a pulmonary contusion without rib fracture(s). Etiologies of rib fractures include blunt trauma, severe coughing, physical abuse, and certain sport movements (throwing, swinging).³



Figure 4. Large pneumothorax, right

A pneumothorax on chest x-ray results in the loss of peripheral lung markings with a straight white pleural line parallel to the chest wall that does not pass outside the chest cavity. Skin folds, bed linens, and the medial scapular border may mimic this condition.⁴ Classification schemes include small and large pneumothoraces, with large defined as being greater than 2-3 cm from the chest wall to visceral pleura, which correlates to 20% to 30% decreased lung volume. Contrary to popular belief, the most appropriate view to initially screen for pneumothorax is an upright inspiratory (not expiratory) film because of the greater thoracic cavity size.⁵ A small primary pneumothorax does not generally require treatment, but a large primary or any size secondary pneumothorax requires treatment and close monitoring.⁵



Figure 5. Pneumomediastinum with pneumopericardium and subcutaneous emphysema

This chest radiograph demonstrates air in the soft tissues of the neck and upper chest (seen within the myofascial planes), in addition to air outlining the mediastinum and superior pericardium.

These findings occurred in a teenage girl who presented with chest pain and “crunchy” skin (Hamman’s sign) after vigorous coughing against a closed glottis. In this case, these findings did not result in hemodynamic compromise, although may in some cases. Other causes of pneumomediastinum or pneumopericardium include blunt or penetrating chest trauma, heavy lifting, mechanical ventilation, rupture of the esophagus, trachea, bronchus or alveoli, perforated viscus, and barotrauma. Treatment ranges from reassurance, observation, or release of air, depending on signs, symptoms, and amount of air. ❖

References

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