

Rib fractures

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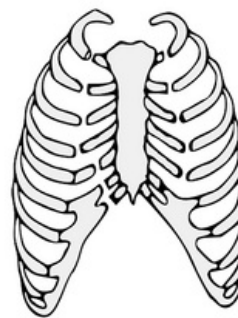
Rib fractures are caused either by indirect violence (traffic accidents, crush-syndrome), which affects the entire chest and leads to fractures in an axis perpendicular to the application of pressure, or by direct violence to a certain area and fractures in her (hits with an object, falls, sports injuries).

We can distinguish multiple fractures that occur on one rib (**segmental fractures**) or fractures that affect several ribs above each other (**serial fractures**).

The most serious type is the so-called **door fracture**, when several ribs are broken on both sides, creating a "door" in the chest wall. The broken part subsequently causes the phenomenon of **paradoxical breathing** - when exhaling, it rises and when inhaling, it falls. This arching and sag is visible as the chest wall moves. It is related to the changing pressure in the interpleural space.

Diagnosis of rib fractures

A patient with rib fractures has significant **pain**, which can be detected by simply compressing the chest during the admission examination. The patient will show us the exact location of the fracture himself. The same **localized** pain is also caused by deep inhalation or exhalation. That's why the **breathing** is very **superficial** in the afflicted. Typical is **bradypnea** with pain, sometimes irritating **cough** and **cyanosis**. Rib fractures are recognizable on the native X-ray chest image. In unclear cases, a CT examination can help. On the X-ray image, we can also diagnose pneumothorax (collapsing of the lung to the hilum, possibly a deformed lung shadow due to fusion of the pleura with the surroundings) and hemothorax in the presence of more than 250 ml of fluid (shadowing in the area of the costophrenic angles). If pneumohemothorax occurs at the same time, air-fluid level is visible at the gas-liquid boundary.



Door fracture – loss of continuity of a certain section with the ribcage

Treatment of rib fractures

The treatment of rib fractures is mainly **conservative**. Mostly in the form of a **bandage** or other fixation of the chest. It is recommended to position the patient in a semi-sitting position (Fowler's position), which facilitates breathing. Rib fractures are very painful, which is why **analgesic treatment** (opiates, Codeine) or **local injection** of the intercostal nerves is recommended (local anesthesia). In case of significant cyanosis of the patient or fracture of more than 5 ribs, we proceed to artificial pulmonary ventilation. **Operative solution** using small splints is only chosen for unstable chests. Rib fractures take approximately 3-6 weeks to heal. On X-ray images, we can see thickening in the area of the original fracture, which is an image of the forming muscle. During recovery, breathing exercises are recommended after being instructed by rehabilitation workers.



Serial rib fracture on X-ray

Complications of rib fractures

Lung injury and pneumothorax or hemothorax often occur. When the so-called splenic ribs (9th-11th rib on the left) are injured, the spleen is often injured with the risk of hemoperitoneum.

Links

Related articles

- Hemothorax
- Pneumothorax
- First aid for chest injuries

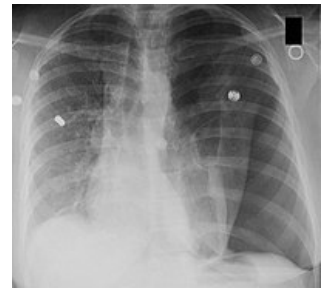
Source

Literature

- ZEMAN, Miroslav, et al. *Speciální chirurgie*. 2. edition. Praha : Galén, 2006. 575 pp. ISBN 80-7262-260-9.



Chest CT scan with hemopneumothorax: A-gas, B-fluid



Left-sided pneumothorax on chest X-ray