

A 29-year-old male with right-sided chest pain

J. van Dijk, I. Krivokuca*, H.B. Kwa

Department of Pulmonology, OLVG Hospital, Amsterdam, the Netherlands,

*corresponding author, currently at the IJsselmeer Hospital, Lelystad:

e-mail: i.krivokuca@umcutrecht.nl

CASE

A 29-year-old male, with no relevant medical history, presented to the emergency department because of an acute right-sided chest pain after taking a shower. The pain increased during exercise. Patient was a current smoker and denied any previous trauma. He had no apparent risk factors for venous thromboembolism. He was afebrile, normotensive and the oxygen saturation was 97%, without additional oxygen supply. Medical examination was unremarkable.

Routine chest X-ray (*figure 1A*) showed 'a pleural line' and was suggestive of a small pneumothorax at the top of the right lung, according to the radiologist. The patient was treated conservatively and was discharged from hospital with an appointment for the outpatient clinic, and was advised to stop smoking.

At follow-up ten days after the visit to the emergency department, a chest X-ray was taken, which showed no radiographic improvement. Thoracic computed tomography was performed to confirm or exclude the diagnosis of pneumothorax, since the patient wanted to travel on an airplane for vacation (*figure 1B*).

WHAT IS YOUR DIAGNOSIS?

See page 43 for the answer to this photo quiz.

Figure 1A. A chest X-ray on presentation

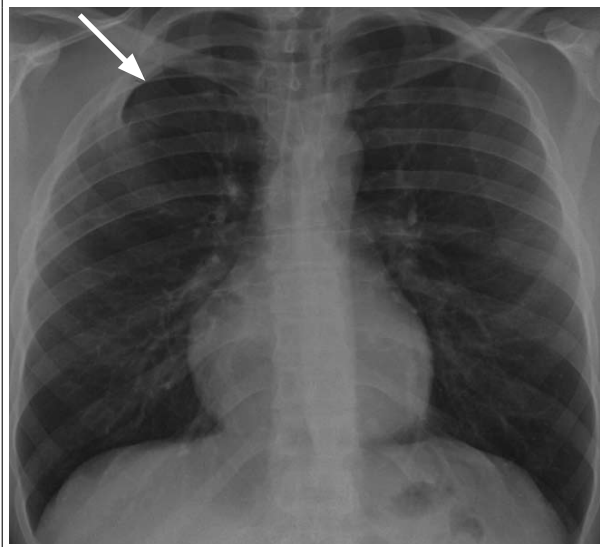


Figure 1B. Computed tomography performed ten days later



ANSWER TO PHOTO QUIZ (PAGE 40)

A 29-YEAR-OLD MALE WITH RIGHT-SIDED CHEST PAIN

DIAGNOSIS

Rib anomaly mimicking pneumothorax.

Bridging between 2nd and 3rd right-sided rib with pseudoarticulation.

Computed tomography of the thorax did not show a pneumothorax; however, there was deformation of the 2nd and 3rd right-sided ribs with bridging and pseudoarticulation, which might have caused the pain (*figures 2 and 3*).

The patient was informed about the diagnosis, reassured and discharged from follow-up. And naturally, no objections were made to his planned journey.

A rib normally develops from the costal process of the developing thoracic vertebrae.¹ Structural and numerical rib anomalies occur in approximately 2% of individuals, although the reported incidence of this condition varies between the series (from 0.15 to 3.4%).² These anomalies are generally more common in females than in males, occur more frequently on the right side and they are usually asymptomatic. The most important clinical exception is a cervical rib which may cause a thoracic outlet syndrome by compression of the brachial plexus or subclavian vessels. Because of that, a cervical rib is of particular interest to surgeons.³

The most frequent anomaly in Wattanasirichaigoon's series was a fusion (72%), followed by bifid (28%) and hypoplastic rib (26%).² Most of these abnormalities are

isolated findings but they could also occur in combination with other congenital abnormalities.

Bone bridging, as in our patient, may be posttraumatic or a congenital anomaly and pseudoarthrosis may be present. Bridging can be seen anywhere along the ribs. There is no predilection site for bridging.⁴

Rib anomalies could be easily overlooked initially and the knowledge of rib anomalies is essential for the differential diagnosis with other thoracic abnormalities (such as pneumothorax in the reported patient).

In conclusion, the reported patient shows that diagnosis of a pneumothorax or rib anomaly can be difficult and can present a diagnostic challenge, especially in symptomatic patients. Careful evaluation is therefore warranted.

REFERENCES

1. Song WC, Kim SH, Park DK, Koh KS. Bifid rib: anatomical considerations in three cases. *Yonsei Med J*. 2009;50(2):300-3.
2. Wattanasirichaigoon D, Prasad C, Schneider G, Evans JA, Korf BR. Rib defects in patterns of multiple malformations: a retrospective review and phenotypic analysis of 47 cases. *Am J Med Genet*. 2003;122A(1):63-9.
3. Kurihara Y, Yakushiji YK, Matsumoto J, Ishikawa T, Hirata K. The ribs: anatomic and radiologic considerations. *Radiograph*. 1999;19(1):105-19.
4. Guttentag AR, Salwen JK. Keep your eyes on the ribs: the spectrum of normal variants and diseases that involve the ribs. *Radiograph*. 1999;19(5):1125-42.

Figures 2 and 3. Computed tomography scan of the chest shows rib anomaly; 2) coronal image, 3) sagittal image)

