Congenital costal fusion can be misinterpreted as lesions on chest X-ray

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DESCRIPTION

A 67-year-old man visited our hospital for fever lasting 1 week, sore throat and appetite loss. He was a current smoker (50 pack-years), had no other particular medical history and was taking no medications. On the first visit, he had no fever, abnormalities in vital signs or physical examination findings. Chest X-ray revealed opacity in the right fifth intercostal space in the right upper lung field, which suggested a mass lesion such as a bone primary tumour or metastasis (figure 1A). Chest CT showed fusion of the right fifth and sixth ribs, which led to a diagnosis of congenital costal fusion (figure 1B). Other examinations found no obvious abnormalities, and the patient was subsequently diagnosed with a viral infection and improved with symptomatic treatment.

Segmentation errors, including costal fusion and bridging, account for 26% of all congenital rib malformations.¹ Costal fusion has reportedly been found in 0.3% of a sample of the general population.² Because congenital rib malformations are mostly asymptomatic,³ costal fusion is often found incidentally on chest X-ray, as in the present case. Rib malformations are frequently associated with a thoracic or thoracolumbar scoliosis.⁴ On the other hand, costal fusion frequently occurs in the first and second ribs, which can cause a thoracic outlet syndrome.⁵ If opacity is seen in the intercostal space on chest X-ray, physicians should first carefully check the differences between the left and right sides of the intercostal space and rib cage on physical examination and chest X-ray rather than quickly perform CT under suspicion of mass lesions. In addition, the presence of thoracic or thoracolumbar scoliosis and symptoms of thoracic outlet

Learning points

- ▶ Congenital costal fusion can be misinterpreted as lesions on chest X-ray.
- ▶ Physicians should first carefully check the differences between the left and right sides of the intercostal space and rib cage on physical examination and chest X-ray rather than quickly perform CT under suspicion of mass lesions.

syndrome could also be helpful for diagnosis. In this case, careful interpretation of the radiographs indicated that the right fifth intercostal space was narrower than that on the left. Not only radiologists but also physicians should be well familiarised with costal fusion, which is not uncommon, to make the correct diagnosis.

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Figure 1 (A) Chest X-ray revealed opacity in the right fifth intercostal space in the right upper lung field (black arrows). (B) Reconstructed chest CT image showed fusion of the right fifth and sixth ribs (white arrows).

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