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Case Report

Total congenital sternal cleft isolated in a newborn of 20 days: Rare case

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ABSTRACT

Sternal clefts are rare malformations, especially in their complete form, which results from a lack of fusion of the sternal bars, which is normally done at the 9th week of intra uterine life. The incomplete form is often associated with other malformations of the chest wall, or falling within the framework of a polymalformative syndrome, the diagnosis is easy, being done with the inspection and the palpation, the paraclinical examinations are useful for confirming the diagnosis. We report the case of a total congenital sternal cleft isolated in an asymptomatic 20-day-old newborn. Thoracic CT, with threedimensional reconstructions, without injection of the contrast product confirmed the diagnosis, showing the presence of two hemistonids hypoplastic.

The aim of our work is to draw attention to this pathology from birth because surgery must be undertaken during the first weeks of life to protect the heart and large vessels from any trauma, to improve respiratory dynamics and for aesthetic reasons.

1. Introduction

Sternal clefts are rare malformations that result from a failure of fusion of the sternal bars, which is normally done in the 9th week of intrauterine life in the cranio-caudal direction.

The sternal cleft can be partial or complete. An isolated sternal cleft with no associated abnormality is rare. Imaging based on standard radiography and CT, which plays a key role in the positive diagnosis, classification and search for associated malformations.

The aim of this study is to show the contribution of imaging in the taking charge of this Affection.

2. Observation

We report the case of an isolated congenital sternal cleft in a 20-day-old newborn. There were no particular incidents during pregnancy, and there was no prenatal diagnosis. The baby was in good general condition, asymptomatic, there was no history of cough, difficulty breathing or upper respiratory infection clinically suspected by his pediatrician. There wasn't any cardiac, pleuro pulmonary, ophthalmologic, and cerebral abnormalities that may have been associated were previously excluded by clinical examination and ultrasonography.

The diagnosis of the sternal cleft has been asserted on the imaging data. In fact, the chest X-ray showed the verticalization of the clavicles (Fig. 1). The chest x-ray in profile showed two hemi-sternums, one of which was more anterior to the other than the medial ends of the sternum were far from the median line. The lung fields were clear.

Thoracic CT without contrast injection, with three-dimensional reconstructions, noted the presence of two hypoplastic hemisternums (Fig. 2) with depression in the central part of the anterior chest wall (Fig. 3). The medial extremities of the clavicles were widely separated.

The surgical procedure consisted on first, separating skin from the pericardium, because they were tied to each other, isolating and dissecting the two hemi-sternums or sternal bars. After the periosteal burrow, the 2 bars were approximated and sutured on the midline with un reserbable sutures, allowing easy closure, under checking of vital parameters. Heart tolerance was satisfactory. A perfect reconstruction of the sternum was obtained with the disappearance of the depression which made it possible to protect the heart and to obtain a stability of the thoracic movement (Fig. 4). In the post operative outcome, the patient was well, however, he presented a local wound infection that healed under antibiotic therapy.

3. Discussion

The sternal cleft is a rare congenital malformation, with an incidence less than 0.15% [1] that predominates in girls and is often complete and isolated. An isolated sternal cleft with no associated abnormality is rare [2]. It's due to partial or complete failure of sternal fusion at the beginning of embryonic development [3]. The sternal

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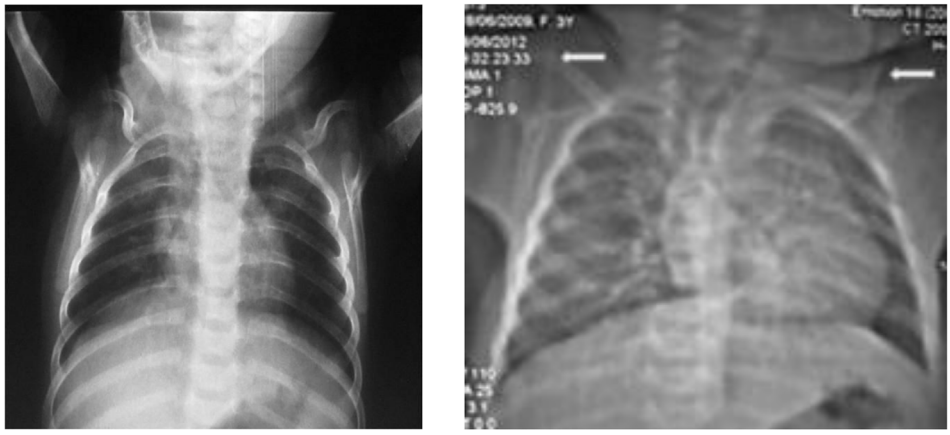

A B

Fig. 1. A chest X-ray (A) and CT topogram (B) showing a verticalization of collabones. (Arrows).

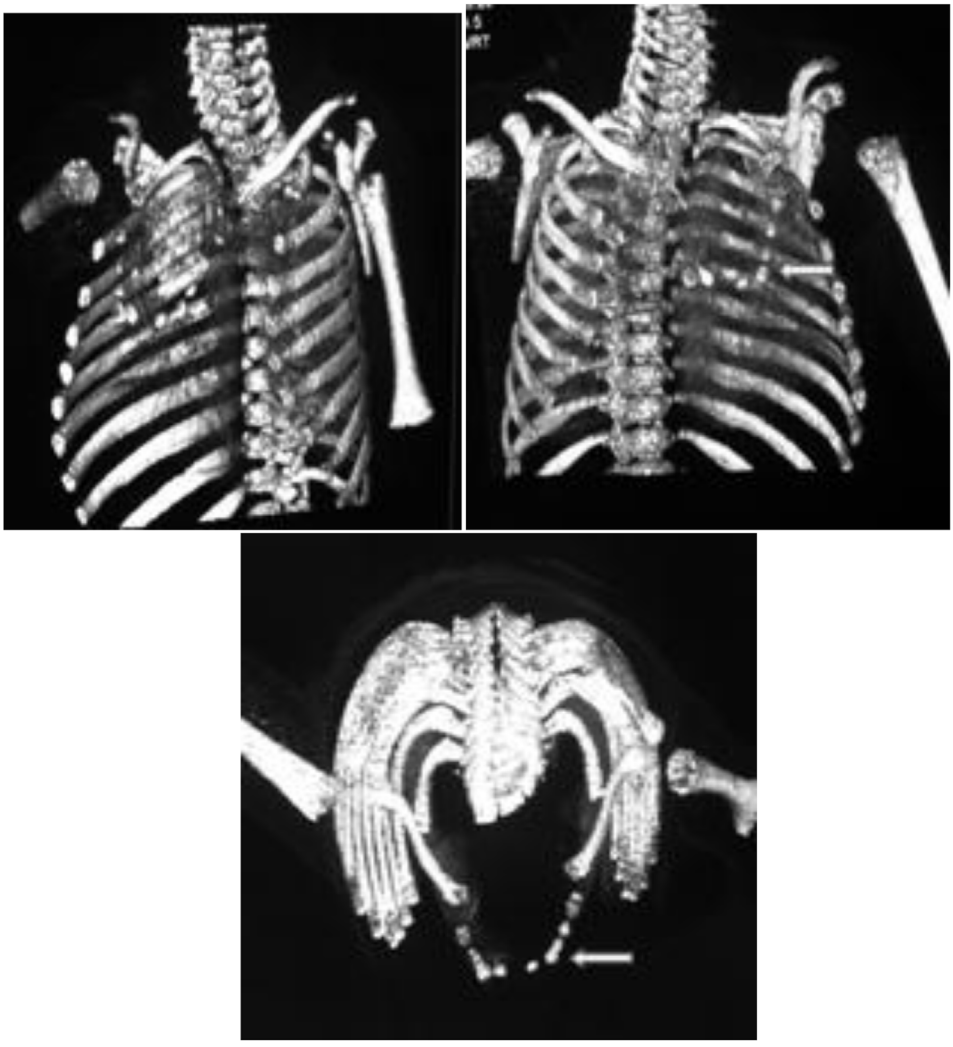

Fig. 2. Tridimentionnel reconstructions showing the sternal cleft.

defect appears to be more easily identified when associated with a cardiac abnormality, due to repeated scans for other malformations.

First described by London in 1740, the sternal crack is a defect of sternum fusion at an early stage of embryonic development. Indeed, at the 7th week of gestation, the two paramedian mesenchymal bands begin their fusion in the cranial portion and complete it until the 10th week of amenorrhea. As a result, the fissure can be total or partial, which concerns the lower and/or upper part of the sternum.

It is a pathology that predominates in girls, and is often complete and isolated.

The inferior incomplete cleft is most often associated with other malformations of the chest wall, or falling within the framework of a polymalformative syndrome, in particular Cantrell syndrome which associates a sternal fissure, a cardiac ectopia, a diaphragmatic defect, a