Skeletal Radiol (1983) 9:212–214

Skeletal Radiology

Case Report 222

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Radiological Studies

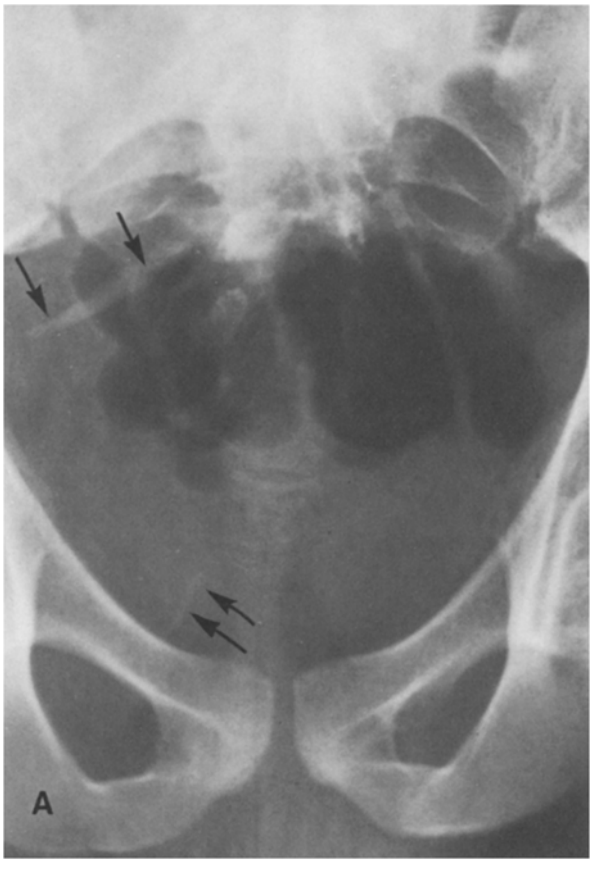

Fig. 1A–C. A An anteroposterior roentgenogram of the pelvis shows two linear bony structures overlying the soft tissues of the pelvis on the right side (*arrows*). The larger arrows point to the longer of the two bony densities. The smaller of the two (*smaller arrows*) linear bony densities is also located on the right side but low in the pelvic cavity just above and lateral to the right pubic bone. A third linear density is apparent in the pelvic soft tissue on the left side just opposite to the bony opacity noted in the foregoing. **B and C** Lateral and oblique views confirm the presence of two of the three bony densities (*arrows*)

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0364-2348/83/0009/0212/$01.00

History

This 20-year-old man suffered blunt trauma to his back for which he was referred to the radiology department of this medical center for excretory urography. A preliminary roentgenogram of the abdomen in conjunction with the study gave no evidence of a traumatic lesion. However, two elongated linear bony structures were observed to be present in the right side of the pelvis; the uppermost (and longer of the two) bony densities was noted to extend laterally and caudally from the junction of the third and fourth sacral segments; the lower most bony opacity (the smaller one) was observed to course in a similar direction, but from the junction of the second and third coccygeal segments (Fig. 1 A–C); a third linear density lies on the left side on the same plane as the higher density on the right.

These bony densities were observed incidentally; the patient denied symptoms of any kind referable to the area of the pelvis and no history of previous trauma to either the innominate bones, pelvic soft tissues or buttocks was obtained.

Diagnosis: Sacral and Coccygeal Supernumerary Ribs (Pelvic Ribs)

The differential diagnostic possibilities of calcified pelvic ligaments and post-traumatic mineralization (myositis ossificans) deserve consideration but are not considered likely, given the history, configuration, location and course of these supernumerary bony structures.

Discussion

In part, because the radiological demonstration and identification of the three linear opacities were incidental and no reason existed clinically to suspect any significant abnormalities, it was believed inappropriate and even illogical to consider biopsy and/or resection.

Supernumerary ribs may occur at any level of the spine (including the sacrum and coccyx) but are most commonly observed in the cervical, thoracic and lumbar areas. Reports of sacral or coccygeal ribs appeared in the French and German literature in the 1930's [1, 4] and in the USA in 1960 [2]. Three articles [5, 6, 7] dealing with sacral and coccygeal ribs have appeared relatively recently. The present case is most unusual since both sacral and coccygeal ribs – rare developmental anomalies – coexist.

In the human and other mammals the ribs and vertebrae develop from a common primordial mass which passes through successive stages of membranous, chondrogenous and osteogenous development [5, 6]. During the earliest membranous stage, mesenchymal cells migrate toward the notochord to form the vertebral column anlage. Chondrification in parts of these blastemal masses are destined to become costal processes, neural arches and ribs, but (in all except the thoracic vertebrae) these structures ordinarily become fused with their respective vertebral centers by the seventh fetal week [3, 6, 7]. In the present case, the rib anlages apparently continued to develop, resulting in the development of pelvic ribs.

A pelvic rib(s) conceivably could impede vaginal delivery in a pregnancy (a remote possibility). Ordinarily, however, in the absence of symptoms, surgery and/or biopsy should not be considered.

In summary, three linear bony densities were identified *incidentally* in the pelvic soft tissues in a 29-year-old man. The direction, configuration and appearance of these linear, bony densities necessarily indicated the presence of supernumerary sacral and coccygeal ribs. The literature was reviewed, and the embryological considerations in the development of sacral and coccygeal supernumerary ribs were discussed.

Biopsy and/or surgery was not considered warranted and indeed, neither was performed. It was pointed out that a supernumerary rib in the pelvis might impede vaginal delivery in a pregnant woman. Otherwise, such anomalous structures are virtually always asymptomatic.

Editor's Comment

Although no definitive proof was offered in this case, the appearance, location and directional plane of the linear bony densities were considered presumptive evidence of the presence of supernumerary sacral and coccygeal ribs.

It is believed by the editor that lack of biopsy and/or surgical proof does not preclude publication of this interesting report.

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