Accessory Sacroiliac Joint: two case report

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We present two cases of accessory sacroiliac joint mimicking focal erosive sacroiliitis on plain radiographs. Two women presented with symptoms of chronic lower back pain. They were initially diagnosed as focal erosive sacroiliitis on plain radiographs. Further CT images of sacroiliac joints found accessory sacroiliac joints.

Accessory sacroiliac (SI) joint is not rare [1], and was first recognized by anatomists in the early twentieth century [2]. Accessory SI joint was formed between the sacral and iliac articular surfaces at the posterosuperior portion of the SI joint, from the level of the first to the second sacral foramen [1]. There were some cadaveric reports [3, 4] on anatomical variants of the SI joints; however, only a few articles were focusing on image findings of accessory SI joints on radiographs [4, 5] or on CT images [6]. To our experiences, most radiologists are not familiar with the variant leading to a miss diagnosis.

Two cases of symptomatic accessory SI joints and the imaging findings on plain radiographs and reconstructed CT images are addressed. CT images are helpful to confirm the diagnosis and avoid misdiagnosis.

Case 1

A 39-year-old woman complained of low back pain for more than one year. Available Laboratory data: ESR: 32 mm/hr, HLA-B27: positive. Anteroposterior radiograph of lumbar spine discovered focal and irregular cortical surface over the lower part of the right-side sacroiliac joint (Fig. 1a). Early stage seronegative spondyloarthropathy with focal erosive sacroiliitis was highly suspected. Subsequent CT scan of SI joint with oblique coronal reformation revealed accessory SI joint over the inferior posterior aspect of the right sacroiliac joint. Irregular joint space narrowing and surrounding sclerosis (Fig. 1b) were noted around the accessory SI joint.

According to clinical and laboratory findings, the rheumatologist excluded the possibility of seronegative spondyloarthropathy. Under the diagnosis of accessory SI joint with degenerative arthrosis, palliative treatment with non-steroidal anti-inflammatory drugs (NSAIDs) was given with improvement of symptoms.

Case 2

The second case is a 25-year-old woman suffered from low back pain for half a year. No labo-
Figure 1. A 39-year-old female complained of low back soreness. a. Plain radiograph of lumbar/pelvis shows focal unsmooth cortex surface at the lower part of the right sacroiliac joint (arrow). The left sacroiliac joint is normal. Early stage seronegative spondyloarthropathy is highly suspected. b. Pelvic CT with oblique coronal reconstruction reveals unilateral focal accessory sacroiliac joint (arrow) at inferior posterior aspect of right sacroiliac joint, combined with irregular narrowing of the joint space and surrounding subchondral sclerosis.

Figure 2. A 25-year-old female complained of low back pain. a. Plain radiograph of the abdomen shows irregular cortex surface with joint space narrowing and osteophyte formation at the lower part of the right-side sacroiliac joint on plain radiograph. Focal erosive sacroilitis is suggested. b. and c. Mild scoliosis of the lumbosacral junction and asymmetrical appearance of bilateral sacroiliac joints are noted. Accessory articulation (arrows in Fig. 2b, 2c) at the posterior inferior aspect of bilateral sacroiliac joints with degenerative arthrosis are well demonstrated on coronal reconstructed CT images.
ratory data was available. Irregular cortex surface with joint space narrowing and osteophyte formation was identified at the lower part of the right-side SI joint on plain radiograph (Fig. 2a). Focal erosive sacroiliitis was the initial diagnosis. The oblique and coronal reconstructed CT images showed accessory articulation at the posteroinferior aspect of bilateral SI joints, with degenerative arthrosis considered (Fig. 2b, 2c). There was no evidence of erosive arthritis at the major portion of SI joints. Under the diagnosis of degenerative accessory SI joint, both patients underwent symptomatic treatment only.

**DISCUSSION**

Some investigators have reported the presence of accessory SI joints (Table 1) [7], which contribute to or are responsible for SI joint dysfunction. Two types of accessory SI joints were classified [9]. The more common “superficial” accessory SI joint is seen between the posterior superior iliac spine and the lateral crest of the sacrum, opposite the second posterior sacral foramen. The less frequency found “deep” type accessory SI joint develops between the large roughened tuberosity of the ileum and the lateral crest of sacrum, opposite the first posterior sacral foramen. Sometimes the accessory SI joint is formed by an osseous projection of the iliac bony plate articulating with the sacral facet [1]. Arthritic change in the accessory SI joints on radiography and CT images, such as irregularity of joint space, bony exostoses, or sclerotic change may be noted [1, 4].

Accessory SI variant has been observed in 8% to 40% of cadaveric samples (Table 1) [7]. Ehara et al. [6] considered the accessory SI joint as a “common variant”. However, it is still a controversy whether accessory SI joint is a congenital or acquired disorder. Trotter [12] considered the accessory SI joint as an acquired lesion because the presence of fibrocartilage around the articular surface in most of her cadaveric specimens. Seligman [13] reported a significant increase in the incidence of accessory SI joints with age, suggesting that they might be an acquired disorder. Prassopoulos et al. [1]

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Table 1. Prevalence of Accessory and “Axial” Sacroiliac Joints (SIJs) Reported from In Vitro and Patient Studies*

<table>
<thead>
<tr>
<th>Reference</th>
<th>Nomenclature</th>
<th>Samplea</th>
<th>Percentage</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derry, 1991 [2]</td>
<td>Accessory</td>
<td>192</td>
<td>10.4</td>
<td>Some with two or three facets per joint</td>
</tr>
<tr>
<td>Schunke, 1938 [8]</td>
<td>Supernumerary articular facets</td>
<td>47</td>
<td>29.2</td>
<td></td>
</tr>
<tr>
<td>Trotter, 1940 [3]</td>
<td>Accessory</td>
<td>958: males, Females, Whites, blacks</td>
<td>40</td>
<td>Frequency increased with age</td>
</tr>
<tr>
<td>Solonen, 1957 [10]</td>
<td>Accessory</td>
<td>30</td>
<td>8</td>
<td>No age or sex given</td>
</tr>
</tbody>
</table>

* Modified from reference 8
b Cadaver or osteological specimens, unless stated patients.
c LBP=low back pain.
also reported a similar increase rate of occurrence associated with age. Jazuta [14] had found hyaline cartilage and joint capsule in accessory SI joint, suggesting the nature of congenital abnormality.

In our two cases, degenerative changes were much more prominent at the accessory SI joint portion than in other parts of SI joint at the same side. Prassopoulos et al. [1] described that low back pain was noted in 65 out of 102 patients with accessory SI joints. He also described the high percentage of the articular surfaces of 52 accessory SI joints presented with the image findings of sclerosis (41/52), osteophytes (10/52), or ankylosis (8/52). The possible etiology of prominent degenerative change at accessory SI joints is that angle of accessory SI joint is more angulated and oblique than other part of SI joint [4]. In Hadley’s reports [4, 9] also supported that accessory SI joints with arthritic change might result in low back pain.

The differential diagnosis of accessory SI joint on radiographs includes traumatic fracture [5], variants of SI joints [1] and focal erosive sacroiliitis. The most common type of sacral fracture is transverse fracture, at the level of S3 and S4 tubercles, and near the lower end of sacroiliac joint [15]. Variants of SI joints [1], such as iliosacral complex, bipartite iliac bony plate and the bipartite bony plate, also should be included in differential diagnosis on radiographs due to their similar anatomy location at the level of S1 and S2 [1]. The accessory SI joints are easily misinterpreted as focal erosive sacroiliitis on radiographs, especially when accessory SI joints associated degenerative arthrosis. Cortical erosion of SI joint is one of diagnostic criteria of erosive sacroiliitis. CT images can be helpful to confirm the diagnosis.

Because the obliquity and complex shape of the sacroiliac joints, a confident diagnosis of sacroiliac joint disease made the patient with low back pain not always possible by radiographs alone [16]. In patients with symptoms and signs consistent with the diagnosis of sacroiliac disease, CT is valuable when focal and irregular cortical surface of the sacroiliac joints are noted on radiographs. It is important for radiologists to be familiar with variations and imaging features of SI joints to avoid misdiagnosis.

REFERENCES
2. Derry DE. Note on accessory articular facets between the sacrum and ilium and their significance. J Anat 1911; 45: 202-210
副薦髂骨關節：兩病例報告

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副薦髂骨關節其實並不少見，只是容易被忽略或誤診。我們報告兩個在X光片表現出局部浸食性薦髂関節炎的副薦髂骨關節案例。兩位長期下背痛的女性，最初根據腹部X光片被診斷為局部浸食性薦髂関節炎。但是進一步的電腦斷層檢查都只有發現副薦髂骨關節，而沒有局部浸食性薦髂關節炎的證據。