CASE REPORT

Intraosseous lipoma of the pelvis and spine: two cases reports

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Introduction

Intraosseous lipoma is considered to be one of the rarest primary bone tumors¹. The metaphyses of long bones, especially the femur and fibula, are involved in most cases. In this study, we present two cases of intraosseous lipoma, one involving the pelvis, and the other the cervical spine.

Case reports

Case one: A 53-year-old woman presented with pain in her right hip for one week after minor trauma. No swelling, tenderness or limitation of movement was present. Plain radiographs showed a well defined, expansile, radiolucent lesion involving the right acetabulum. The lesion was surrounded by sclerosis and contained osseous septations (Fig. 1). Computed tomography (CT) showed a hypodense lesion with expanded cortex (Fig. 2). Magnetic resonance imaging (MRI) showed high signal intensity on T1 weighted images, similar to subcutaneous adipose tissue (Fig. 3), and decreased signal intensity on short-T inversion recovery (STIR) images. Surgery consisting of curettage and bone grafting was performed. At surgery, the lesion was grossly yellow in color and fatty in consistency. Histologically, mature lipocytes and fine fibrovascular septa were noted (Fig. 4).

Case two: A 37-year-old woman was sent to our hospital because of a swelling in her neck for 6 months. No pain or limitation of neck movement was present. Plain radiographs showed a clearly defined radiolucent osseous expansile tumor originating in the spinous processes of the third cervical vertebrae (Fig. 5). CT showed no appar-

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Figure 1. Plain radiograph of patient 1 showing a well defined, expansile, radiolucent lesion (arrow) involving the right acetabulum; it is surrounded by sclerosis and contains osseous septations.

ent periosteal reaction, no evidence of soft tissue tumor, and multilocular change within the bone tumor (Fig. 6). MRI showed that the spinous processes and the lamina of the third cervical vertebra were damaged. The tumor

Figure 2. CT of patient 1 showing a hypodense lesion and expanded cortex.

Figure 3. MRI of patient 1 showing high signal intensity, similar to subcutaneous adipose tissue on T1 weighted image.

presented high signal intensity similar to subcutaneous adipose tissue on T1 weighted images (Fig. 7), a low signal on T2 weighted images with fat-suppression (FS), and no obvious change after enhancement scanning. At surgery, the lesion was yellow in color and fatty in consistency. Histological examination revealed mature lipocytes and fine fibrovascular septa were noted (Fig. 8).

Discussion

Intraosseous lipoma is a type of benign bone tumor that proliferates from mature lipocytes, and it is considered to be one of the rarest bone tumors¹. Some authors

Figure 4. Mature lipocytes with fine fibrovascular septa are noted histologically in the lesion excised from patient 1. HE, ×100.

Figure 5. Plain radiograph of patient 2 showing a clearly defined osseous expansile radiolucent lesion originating in the spinous processes of the third cervical vertebrae.

believed that intraosseous lipomas are more frequent than currently reported, because the tumor typically remains latent and often presents no symptoms^{2,3}. The age range of patients at presentation is wide, from 10 to 80 years old,

Figure 6. CT of patient 2 showing no apparent periosteal reaction, no evidence of soft tissue tumor, and multilocular change within the bone tumor.

Figure 7. MRI of patient 2 showing that the spinous processes and lamina of the third cervical vertebra are damaged, with high signal intensity similar to subcutaneous adipose tissue on T1 weighted image.

the most usual age being about 40. There is no obvious difference in distribution between different sexes. The calcaneus and long tubular bones, especially the femur, tibia and fibula, are the common anatomical locations. In the long bones, the metaphysis is most often involved. Intraosseous lipoma in the calcaneus is known for its unique characteristics. Rarely lesions originating in other

Figure 8. Mature lipocytes with fine fibrovascular septa are noted histologically in the lesion excised from patient 2. HE $\times 40$.

bones, including the pelvis, spine, sacrum, and skull, have also been observed⁴⁻⁶.

Most lesions are asymptomatic. Thus, this disease is usually discovered incidentally on radiographs while unrelated disorders or injuries are investigated. A few patients have some symptoms such as pain or swelling. It has been reported that nerve compression symptoms can be induced by expansion of the tumor. Plain radiographs show a well defined, radiolucent lesion surrounded by sclerosis, with osseous septations within it. This tumor can, in some cases, exhibit mild swelling, with or without calcified plaque. The features of an intraosseous lipoma can be similar to fibrous dysplasia, osteoblastoma, bone cysts, enchondroma, or even chondrosarcoma. Intraosseous lipoma in the calcaneus needs to be differentiated from bone pseudocyst and bone infarction. CT and MRI have great value in the diagnosis of intraosseous lipoma. MRI, in particular, can make the final diagnosis in some cases, making investigation by biopsy or surgery unnecessary. Fatty tissue shows higher signals on T1 weighted and T2 weighted MRI, but low signals on FS MRI. All of these features provide a practical basis for the diagnosis of intraosseous lipoma⁷.

Most authors have stated that it is not necessary to operate on asymptomatic intraosseous lipoma. Surgery is only recommended for patients with symptoms, or those at risk of pathological fracture. Tumor curettage and bone grafting are often suitable when surgery is necessary. Aggressive measures are unnecessary because of the low incidence of tumor recurrence after curettage^{1,5,8}.

The pathological confirmation of the diagnosis in our two cases was consistent with the diagnosis made on the basis of MRI. In this report, the anatomical locations of intraosseous lipoma were the pelvis and a cervical vertebra, both of which are rare sites for this tumor. In case 1, the tumor occurred in the weight-bearing area of the hip, and the cortex of the bone appeared to be swollen and thin, giving rise to a risk of pathological fracture. This made surgical treatment necessary, because it would have been much more difficult to treat the tumor after pathological fracture. In case 2, the tumor originated from a cervical vertebra, with obvious swelling. A large tumor had formed, that could be felt through the overlying skin. Plain radiographs showed that the physiological curvature of the cervical vertebra had been changed by the tumor. Due to its anatomical location, further degeneration of the cervical vertebra would occur with continued growth of the intraosseous lipoma. Surgical treatment was thus necessary.

On the basis of these two cases we believe that the anatomical location may be one of the important indications for surgery in such benign bone tumors.

References

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