Mature bone metaplasia in abdominal wall scar

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Summary

A 58-year-old man who had had three laparotomies for gastric surgery, developed a painful mass in the abdominal wall scar. Radiology confirmed bone formation in the scar. The bone was excised and the wound repaired. Histology confirmed metaplastic mature bone formation. This case draws the attention to the clinical condition of bone formation in midline scars. Clinically, it should be differentiated from scar recurrence following surgery for abdominal malignancy.

Keywords: myositis ossificans; heterotopic ossification

A 58-year-old man presented with a 9-month history of a painful swelling in a left paramedian scar. In 1966, he had a Polya gastrectomy, for peptic ulcer disease. In 1993, he presented with severe biliary reflux oesophagitis. Upper endoscopy confirmed the diagnosis. He was treated with omeprazole and cisapride with little improvement. He was referred for surgical opinion and in 1996, he had a 'Roux en y' reconstruction. This was followed 8 weeks later by laparotomy for division of omental adhesions causing jejunal obstruction. On this third laparotomy, ectopic calcifications were noted in the scar. Postoperatively, he developed a wound infection followed by a small bowel fistula, which closed spontaneously.

In 1997, he presented with a tender mass under the laparotomy scar. Initially, ultrasound and magnetic resonance imaging (MRI) confirmed a soft tissue mass. The pain in the scar increased gradually over the next few months, and surgical exploration of the mass was indicated. A pre-operative plain X-ray showed abdominal wall calcifications.

At operation, a 140 × 45 mm piece of mature bone was found underneath the scar, between the posterior rectus sheath and the peritoneum. This was dissected and was found to merge with the xiphoid cartilage. The bone was divided just below the lower end of the sternum using a bone-cutting forceps.

Histology

Macroscopically, the specimen was a hard spindle-shaped piece of tissue 140 × 45 × 20 mm, which required sawing and blocks were decalcified. Microscopically, the lesion consisted of mature lamellar bone within which bone marrow showing trilineage haematopoiesis was present, together with cartilage and fibro-fatty connective tissue. The histological

Figure Photomicrograph showing bone and bone marrow. Within the bone, areas of cartilage are visible. (Haematoxylin and Eosin, original magnification × 50)

features were unlike those of myositis ossificans, and the appearance was most in keeping with osteocartilaginous metaplasia. There was no cellular atypia or evidence of malignancy.

Discussion

Traumatic myositis ossificans has been repeatedly reported in the literature. This usually follows a contusion to a muscle caused by a sport injury.¹ In midline incisions, injury to the xiphoid process or pubis may liberate bone-forming cells.² As in this reported case, the initial clinical picture is often confused with that of osteomyelitis or soft tissue abscess.³ A case of myositis ossificans was also reported in the platysma following radical neck dissection.⁴ In second-look surgery for intra-abdominal malignancy, bone formation should not be mistaken for recurrent malignant disease in the abdominal wall.²

A palpable mass with severe loss of movement is the usual clinical presentation. X-Rays later show a fluffy density in soft tissue, and ultrasound may sometimes show evidence of the condition within a week after trauma.¹ Computed tomography (CT) scan can show complete ossifications indicative of the mature phase of the pathologic process and may help in planning surgical resection.⁵ In our case MRI was used instead of CT scan.

Surgical removal of the calcified swelling is often indicated due to increasing pain and disability.³ In case of athletes, a large mass of mature lamellar bone is also associated with muscle weakness and significant loss of joint motion.⁶ Shugar warns that recurrence may follow excision of the abnormal bone, and recommends surgery only if there are significant symptoms associated with the lesion.

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Disodium etidronate has been claimed to delay and partially prevent postoperative recurrence of heterotopic ossification.⁷

The immature bone, cellular proliferation and zoning characteristic of myositis ossificans were absent.⁸ In the histological differential diagnosis we considered a neoplasm of the xiphoid with which the lesion appears to be in continuity. However, the lack of immature or atypical elements was more in keeping with a metaplastic phenomenon. An osteochondroma consists of bone and cartilage, but typically has a cartilaginous cap with bone beneath.⁹ In our patient, the cartilage and bone were mixed

together, with no cap-like structure. Bizarre parosteal osteochondromatous proliferation was also considered, but this tends to occur in the hands and feet, and no bizarre chondrocytes were present.¹⁰

We have here described a case of metaplastic bone formation with marrow spaces and cartilage in an extraskeletal site. The condition must be considered in swellings affecting mid-line abdominal scars.

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High-altitude illness induced by tooth root infection

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Summary

High-altitude illness may occur after recent pulmonary infection, but high-altitude illness after root canal therapy has not been described previously. A 44-year-old man is presented who skied to a 3333 m high peak in the Eastern Alps one day after he had undergone root canal therapy because of a tooth root infection. After 4 hours above 3000 m severe symptoms of high-altitude illness, including pulmonary oedema, developed. His condition improved after immediate descent. The next day he presented with local and general signs of infection which were successfully treated with gingival incisions and antibiotics. In conclusion, acute tooth root infection and root canal therapy may induce high-altitude illness at an altitude just above 3000 m.

Keywords: high-altitude illness; pulmonary oedema; root canal therapy; tooth root infection

Usually, high-altitude illness occurs at elevations >2500 m and includes mountain sickness, high-altitude pulmonary oedema, cerebral oedema and retinal haemorrhage.¹

Whether or not recent infection predisposes to high-altitude illness is controversial.^{2,3} High-altitude illness associated with tooth root infection, as in the following case, has not been reported previously.

Case report

Four weeks before a skiing trip, a previously fit 44-year-old man experienced increasing fatigue and declining fitness. There was no indication of an infectious disease, although root canal therapy for a granuloma of the first left upper incisor had been proposed by the treating dentist 2 month earlier but declined by the patient. Two weeks before the trip, the patient experienced aching of the first left upper incisor with an associated gingival inflammation over its root column. Radiography was indicative of tooth canal infection, and the patient underwent root canal therapy, leaving the root canal open, one day before starting his skiing trip.

After slowly ascending to 1720 m by bus, he took a cable car to reach 3170 m within one hour. He had ascended to altitudes >3000 m within one day without major problems several times before. This time he observed unusual

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