



An unexpected complication of a heterotopic ossified abdominal scar



Ann Ital Chir, Digital Edition 2018, 7
pii: S2239253X18027779 - Epub, June 12
free reading: www.annitalchir.com

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An unexpected complication of a heterotopic ossified abdominal scar

AIM: Presentation and discussion of a case of heterotopic ossification of a vertical abdominal surgical scar.

PERSONAL OBSERVATION: A recent trauma in an 70 year old patient, followed by a sudden internal hemorrhage because of a penetration in abdomen of a bone stump, originated from a fracture of a not known heterotopic ossification of an old median abdominal scar, of a laparotomy of many years earlier for perforated duodenal ulcer.

RESULTS: An emergency surgery was mandatory

DISCUSSION: Pathogenesis of heterotopic ossification, as rare metaplastic phenomenon outside of the normal bone tissue, still unknown and speculative.

CONCLUSION: Despite the rarity the complications of heterotopic bone formation can also be very dramatic following a trauma that transforms the new bone into traumatic agent, as in the present observation.

KEY WORDS: Heterotopic ossification, Ossified abdominal scar

Introduction

Heterotopic ossification is a metaplastic phenomenon defined as an abnormal deposition of mature, lamellar bone, in soft tissues and exceptionally in the mesos of the peritoneal cavity ^{1,8}.

It is most commonly found in orthopedic pathology (about 2-7% of operations for hip osteoarthritis),ut is rare in abdominal surgery, particularly concerned in vertical incisions on male patients (89%) ⁹.

Case Report

It is about a 70-year-old man who suffered a minor domestic trauma, slipping into the bathroom, throwing the epigastrium against the edge of the sink. He complained of a supra-umbilical painful sensibility which reversed within two hours. After a silent evolution of 10 hours, the pain returns, this time of a very strong intensity, accompanied by perspiration, physical asthenia and gastro-alimentary vomiting. With this symptomatology the patient is brought by the SMURD (Emergency mobile resuscitation service) to the Emergency Department of the County Hospital of Buzau.

At the hospital, anamnesis has revealed a therapeutically controlled essential hypertension, a gouty disease currently being asymptomatic, a surgery carried out 30 years before for perforated duodenal ulcer (resolved by suture) and a second surgery operation, more recent, for an adenoma of the prostate.

Pervenuto in Redazione Luglio 2017. Accettato per la pubblicazione Novembre 2017

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Fig. 1



Fig. 3

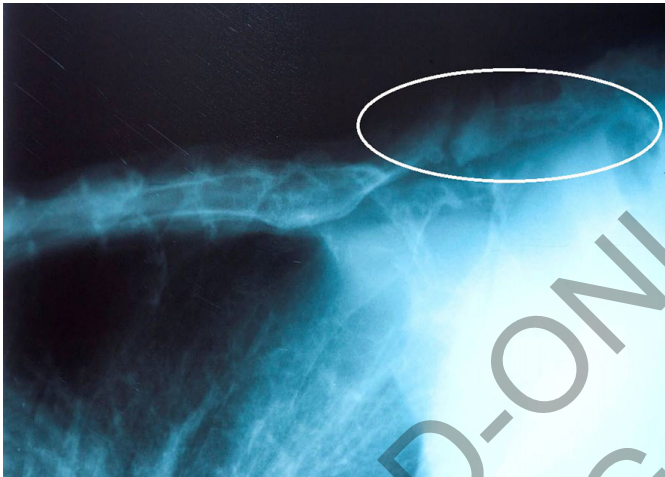


Fig. 2



Fig. 4

The physical examination performed by the emergency physician revealed a median subumbilical scar with a parietal swelling, more evident at the profile, spread over the entire length of the incision and visibly altering the epigastric relief (Fig. 1). Under the scar, palpation showed a striped indurated mass with a width of about 4 cm, a structure that did not leave the impression of having a deep visceral contact. The palpation also raised a tight, very sensitive wall, especially in the upper level. Under these circumstances (for a smoker and a drinker patient, with a palpable epigastric mass and an anamnesis that was as seductive at first sight for a perforation of a hollow digestive organ), the small traumatic event of the morning passed almost unnoticed. His relatively stable hemodynamic status (systolic blood pressure 100-110 mmHg and mild tachycardia, 100 / min) allowed the patient to be sent to the radiology department for a simple abdominal radiography that denied reversed the pneumoperitoneum, but which, on the other hand, identified a cicatricial structure (3-4 cm thick

and about 15 cm long) of the xipho-umbilical incision, fractured in the proximal part (Fig. 2). Returning from the imagistic examination, the patient becomes unstable (systolic blood pressure = 60 mmHg, pulse = 120 / min) and presents a lipothymic episode that requires rapid i.v. administration with 2000 ml of crystalloids solutions and a call to a surgical consultation that noticed a patient with signs of hypovolemic shock and the classical aspect of acute abdomen. The hematological report showed a drop in hemoglobin to 6.5 g% and hematocrit = 22%. An echo-fast exploration practiced at the patient's bed confirmed a large effusion in the peritoneal cavity. With a continuous transfusion of 2 units of blood the patient was transferred quickly to the operating room. The median iterative laparotomy exposed an ossified scar (14.5 x 3 x 2 cm) fractured at the junction with the xiphoid (Figs. 3, 4), which during the accident of the bathroom tilted the ossified structure towards the intra-peritoneal visceral mass and produced a haemorrhagic



Fig. 5

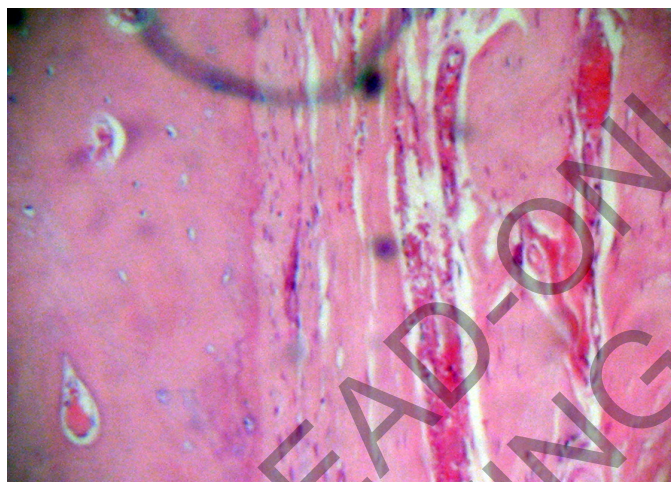


Fig. 6

laceration of the large omentum (Fig. 5). The direct consequence was the hemoperitoneum, which had a blood volume of 1.8 L and was responsible for the hemodynamic depreciation of the patient. Hemostasis “in situ” on the large omentum and the explantation of the ossified scar marked a final with simple follow-up for a rare and unexpected pathology. Histopathological examination of the resected piece (HE, 10x10) showed the markers of the heterotopic ossification of the scar (Fig. 6): lamellar bone structure, osteoclasts and proximal inflammatory reaction.

Discussion

The cicatricial ossification process was mentioned in the medical literature by Riedel (1883) as a complication after

spinal trauma, but the first reference on bone metaplasia of an abdominal scar belongs to Askanazy in 1901². The pathogenesis is still unknown and speculative. The mechanism is probably multifactorial and several theories have been proposed³. Older articles suggested that medio-abdominal incisions in the proximity of the xiphoid process or the pubic symphysis can inoculate osteogenic material responsible for ossification. But this theory does not explain, for example, the ossification of a post-burn scar or a chronic⁴.

A recent review of the literature (Koolen 2010) identified in PubMed only 43 studies correlated to the “Heterotopic ossification in abdominal scars” item and the accepted conclusion refers to at least 4 factors responsible for ossification⁵.

The existence of a local trigger event (in our case, the index operation for perforated ulcer).

The ability of mesenchymal stem cells to respond to a local stimulus (incisional trauma, ischemia, etc.) and to metamorphose into osteoblasts or chondroblasts².

Another theory advances the idea of a humoral involvement of E2 prostaglandins delivered as a local reaction to non-resorbable suture material or with slow resorption⁶.

The last mechanism involved refers to a mutation of a specific gene capable of activating BMP₁ receptor; and it is already known that BMPs (bone morphogenetic proteins) are involved in several stages of osteogenesis⁷.

Most cases occur in the first year after surgery but in some situations ossification is discovered 30 years post-operatively¹¹. Imaging (conventional radiology, CT scan or IMR) is necessary to assert the diagnosis by excluding tumor formations or intra-parietal retention of a foreign body¹². Although in most cases the progression is paucisymptomatic and does not lead to functional disability, a post-traumatic fracture or a malignant transformation of the ossified scar tissue is always possible^{10, 13}. Surgical treatment (resection of the ossified scar) is recommended for patients with obvious and troublesome symptoms; postoperative adjuvant radiotherapy remains a controversial indication². Regarding the administration of Etidronate Disodium (according to the Paget disease model, where the ionic conversion of calcium and phosphate to hydroxyapatite is inhibited), a recent review by Cochrane Database¹⁴ concluded that there is no evidence of the efficacy of bisphosphonates in the regression of heterotopic ossification.

Conclusion

The heterotopic ossification of the abdominal scars remains a rare pathology with a still speculative etiopathogenesis. Only symptomatic cases should be operated. Radiotherapy and hormonal therapy

(Etidronate Disodium) have not proved a real benefit. Visceral complications and sarcomatous transformation are rare but possible.

Riassunto

Viene presentato un caso di emorragia interna conseguente ad un trauma occasionale, che aveva determinato la frattura e la penetrazione in addome di una struttura ossea neoformata su cicatrice addominale di molti anni prima, e fin al momento misconosciuta. In tutto venne chiarito in corso di un intervento chirurgico in urgenza.

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