The Late Effect of Grenade Fragments

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SUMMARY: Following the explosion of a grenade or shell, the victim may be peppered with literally hundreds of pieces of metal. Troublesome fragments which perforate a major viscus may be removed but others are often left behind, and it is felt (usually correctly) that these fragments will cause no harm. We describe a case in which a grenade fragment received 16 years previously pierced the large bowel. A psoas abscess developed which was located by ultrasound. Pus was aspirated under ultrasound control and the lesion was successfully treated by antibiotics.

Case Report

The patient was 38 years of age at the time of his recent illness. 16 years before in Aden he was injured by a hand grenade and received multiple wounds, mainly to the left side of body. The lower pole of the left kidney was perforated and bled profusely into the retroperitoneal space. There was a through-and-through perforation of the descending colon. The fragments causing these injuries were not found. There were also four wounds in the right thigh, two wounds in the left thigh, one in the right ankle and one in the left calf which were excised and treated by delayed primary suture. The perforated segment of colon was exenterated and a temporary colostomy was performed. Recovery from these injuries appeared to be complete.

10 years later the patient had an emergency pyloroplasty and vagotomy for a bleeding duodenal ulcer. The operation was difficult because of adhesions. He remained well for 6 years and then developed pain in the left hip which radiated down to the knee. The pain gradually increased in intensity. After two weeks, the patient found he could ease the pain by flexing the hip and complained of a new pain in the back. Palpitation of the left loin was painful as was extension of the left hip. The W.B.C. count was $18.9 \times 10^9/l$ and the E.S.R. was 120. A radiograph of abdomen showed numerous metallic fragments in the abdomen and the psoas outline looked indistinct. The clinical diagnosis of a pyogenic psoas abscess was confirmed by an ultrasound scan (see figure 1). Under ultrasound control, a small volume of very thick pus was aspirated through a 20 gauge spinal needle. *Bacteroides*

Fig 1 Retroperitoneal abscess (arrowed) demonstrated on transverse ultrasound scan of left iliac fossa.

fragilis was grown from the pus. Metronidazole 400mg t.i.d. was given by mouth for 10 days. After 5 days the patient's pain was less, the W.B.C. count had fallen to $11.3 \times 10^9/l$ and the abscess was half the original size.

One month later he was totally asymptomatic and had returned to duty although a further ultrasound examination showed persistence of the abscess cavity which was smaller and less clearly defined suggesting further resolution.

The patient continues to serve in the Regular Army in an unrestricted medical category and has had no further problems from his multiple metal fragments during the last 20 months.

Discussion

It is classical surgical teaching that the abdomen should not be explored to find sterile grenade fragments. Such teaching is based on sound experience, as dense connective tissue tends to form around metallic bodies preventing further problems.¹

Projectiles, such as bullets can lodge in vital organs, such as the heart for many years without causing problems. In 1941, Grey Turner² described a patient who had been under his care for 23 years with a machine gun bullet in the heart. The same paper describes a specimen in the Royal Army Medical College at Millbank. The heart was removed from a soldier who had died in 1874 in Ashante from remittant fever. He had been shot in the chest while serving in New Zealand in 1860 and had made a full recovery. A musket ball was lodged at the root of the great vessels and caused no problem during life. Occasionally problems can develop years after the initial injury³ as in this case. The clinical presentation as an acute psoas abscess however, was very unusual. Ultrasound proved to be a most useful technique confirming

the diagnosis and aiding aspiration to obtain pus for culture. Surgical excision of the offending fragment would have been difficult owing to the extensive adhesions from previous operations and may have resulted in the excision of a long length of colon. Aspiration of pus and suitable antibiotics was a preferable treatment. The psoas abscess was treated 20 months ago. Hopefully the splinter is now surrounded by fibrous tissue and will cause no further problem.

Acknowledgement

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