SPONTANEOUS RUPTURE OF THE SPLEEN IN INFECTIOUS MONONUCLEOSIS

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SMITH and Custer (1946) in their report on seven patients with infectious mononucleosis complicated by rupture of the spleen, mentioned that only three well established cases had been previously reported in the literature, (King 1941, Darley et al 1944, and Ziegler 1944). Garfield and Gentry (1959) in recording one case found references to thirty one cases in the literature. This latter series did not include two cases documented in the English Journals (Wagman 1957 and Davidson 1958). In recent years, many other cases have been reported, including Ridgely (1960), York (1962), Freeman (1962), Wetherill and Oldfield (1963), Brown, Sass and Cheng (1964), Januez, Berbos and Taylor (1965), Hedrick and Lettner (1965) and Dickson (1965).

Case Report

A soldier, aged 22 years, experienced sudden severe abdominal pain on April 4th, 1966, when walking from a classroom to his billet. The pain was felt mostly in his left hypochondrium and radiated to his left shoulder. It was worse on deep breathing. He felt giddy and nauseated, but did not vomit. He was admitted to hospital four hours after the onset of symptoms. He gave no history of indigestion, of recent illness, or of injury.

On clinical examination he was pale and clammy. Temperature was 98°F, pulse 110 per minute, and blood pressure 120/70 mm. Hg. Generalised deep tenderness, most marked in the left hypochondrium, was present on palpation of his abdomen, which was soft and not distended. No abnormal mass was palpable. Bowel sounds were normal.

Results of investigations were as follows:—Haemoglobin 82 per cent, total white blood cells 22,700/c. mm., with polymorphs 64 per cent, lymphocytes 28 per cent, monocytes 5 per cent, eosinophils 3 per cent. Chest X-ray was normal. Straight X-ray of abdomen revealed no abnormality.

Approximately a half an hour after he had been given 100 mg. of pethidine, his blood pressure fell to 75/50 mm. Hg. It then seemed apparent that he had an intra-abdominal haemorrhage. An intravenous drip of normal saline was commenced and blood was cross-matched for transfusion. Gastro-graphen was inserted into his stomach by a nasogastric tube and the gastric shadow was seen to be displaced to the right. The haemorrhage was considered to be occurring in the left sub-diaphragmatic region and a diagnosis of rupture of a congenital aneurysm of the splenic artery was made. Laparotomy, through a left oblique subcostal incision, was performed. Approximately five pints of blood were removed from the peritoneal cavity. A perisplenic haematoma was present. The spleen was soft and friable and was almost completely denuded of its capsule. Splenectomy was carried out. No evidence of aneurysm was found but several enlarged lymph glands were present in the hilum and adjacent gastro-splenic omentum.
His subsequent progress was uneventful apart from the persistence of a low grade fever for about a week after the operation. During this period, enlarged lymph glands having been palpated in both axillae, groins and left side of neck, a Paul-Bunnell test was performed. This was positive with a titre of 1:1280 after absorption with guinea pig kidney. He was discharged from hospital on 19th April, 1966. During his convalescence, the titre was 1:160 on 5th May, 1966, and 1:40 on 27th May, 1966.

The pathological report on the spleen noted that:—The organ measured 17 centimetres by 9 centimetres by 4.5 centimetres, weighing 400 grammes. Only a small remnant of capsule was intact in the region of the hilum. Several erosions and fissures were present on the visceral surface. The number and size of the follicles were definitely decreased. No germinal centres were present. The trabeculae and portions of the capsule were infiltrated by lymphocytes. No definite "Downey" cells were seen. It was felt that the histological picture was consistent with a diagnosis of infectious mononucleosis.

The patient admitted, when he had recovered from the operation, that he had been unwell during the week prior to his admission with symptoms of anorexia, malaise, headache, sweating, chest pain and shivering. He had been taking codeine tablets. However, he still denied having sustained any form of injury or strain.

Discussion

Infectious mononucleosis is a generalised infection of lymphoid tissue which is characterised by a benign self-limited course, a characteristic blood picture and the presence of a heterophile antibody in the blood stream, (Dameshek and Grassi 1946)

It occurs most commonly amongst school children and young adults. The symptoms may be mild, consisting of any or several of the following:—headache, malaise, lassitude, sore throat, cough, rhinorrhoea and fever. When the complication of rupture of the spleen occurs, apart from the signs of intra-abdominal haemorrhage, the only presenting clinical feature may be enlarged superficial lymph nodes. The characteristic blood picture of a well defined lymphocytosis may well be altered by a shift in the differential count to the left, due to the stimulating reaction to haemorrhage on a normal bone marrow. However, a screening slide test will demonstrate the presence of heterophile antibody in the patient's serum. Confirmation of the diagnosis can be made in retrospect by the specific Paul-Bunnel test and by the histopathological examination of the spleen. The pathological changes seen in the latter have been summarised as follows by Smith and Custer (1946):—“blurred architecture due to atypical lymphocytes diffused throughout the pulp and lymph sinuses, small poorly developed follicles, infiltration of the capsule and trabeculae by monocytes and lymphocytes and swelling of the cells lining the blood sinuses”.

Analysis of case reports recorded in the literature indicate that the complication would seem to occur most frequently during the third week of the patient's illness. However, in Dickson's (1965) and the author's case, it presented approximately one week after the onset of symptoms. Smith and Custer (1946) mention that the interval was thirty days in one patient, and one of Hedrick's and Lettner's (1965) cases had lethargy for four weeks prior to splenic rupture. It is not possible to say when and how long the patient remains at risk during his illness. Even though the spleen may be invariably enlarged during the height of the disease, the incidence of palpation of the organ may be as low as forty per cent (Cruickshank 1965). The titre of the patient's
serum heterophile agglutination bears no relation to the severity of the disease. Whitby
and Britton (1963) quote a series of seventy eight cases when thirty five per cent gave a
positive reaction, but at varying intervals, some as early as the third day and some not
until the second month. The reaction remained positive usually for two to four months.

There has been much discussion in the literature as to the cause of spontaneous
splenic rupture in this disease. Smith and Custer (1946) concluded from their histological
examination of seven spleens which had ruptured spontaneously, that “infiltration of
the capsule and trabeculae had reached considerable proportions, occasionally to the
point of complete dissolution of these structures”. These changes would usually take
a few weeks to develop and were associated with rapid enlargement of the organ. They
served as a predisposing cause of rupture. Rupture of the organ may then be precipitated
by minor trauma or by the patient’s own physical exertions.

Freeman (1962) reported the complication resulting from attempts to pass flatus.
Davidson (1958) quoted a case from the literature (Belton 1952) where rupture was
associated with digging. Smith and Custer (1946) described how a patient, who had a
“cold” for about a month, experienced a sudden severe abdominal pain whilst getting
into bed. Wetherill and Oldfield (1963) indicated that vomiting was the precipitating
cause. Abdominal palpation was noted as the causal factor by Garfield and Gentry (1959).
Hedrick and Lettner (1965) recorded a case with symptoms of pharyngitis, collapsing on
the way to the bath-room. Davidson (1958) stated that the enormous increase in the
size of the spleen might lead to a tear in the weakened capsule spontaneously even
whilst the patient is asleep.

The incidence of the complication must be very low. Hoagland (1960) in a report
of two hundred cases of infectious mononucleosis recorded one case of splenic rupture.

The mortality rate in this condition has been reported as being high. Garfield and
Gentry (1959) found ten fatal cases in the references to thirty one in the literature. Early
diagnosis with prompt resuscitation and splenectomy is necessary to save the patient’s
life. However, the haemorrhage may be fulminating, and death has occurred within
an hour of the onset of the symptoms (Hedrick and Lettner 1965). In recent years reports
would appear to indicate that the mortality may well have been reduced because doctors
have become more aware of the complication. The occurrence of spontaneous intra-
abdominal haemorrhage in an apparently otherwise healthy young individual, should
suggest to the surgeon the possibility of rupture of the spleen associated with glandular
fever.

Patients known to have infectious mononucleosis should be advised to refrain
from strenuous activity for about a month after the commencement of their illness, no
matter how mild their symptoms are. It is suggested that service personnel should be
re-assessed for a minimum period of three months.

Summary

The literature concerning splenic rupture in infectious mononucleosis has been
briefly reviewed and a further case reported.

The complication has been discussed, from the point of view of presentation and
diagnosis, the period during which a patient with the disease may be at risk, its causal
factors and mortality rate.
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