SPONTANEOUS RUPTURE OF THE SPLEEN IN INFECTIOUS MONONUCLEOSIS PRESENTING IN THE CASUALTY DEPARTMENT

G. H. DICKSON, F.R.C.S.

Upton Hospital, Slough.

RUPTURE of the spleen following mild or no obvious trauma is a well known entity in malarial areas. Spontaneous rupture of the spleen affected by infectious mononucleosis is a rare event. The first case was described in 1922 by Friesleben, but the diagnosis of infectious mononucleosis in this case is difficult to establish.

In 1946 Smith and Custer reviewed seven cases which they found in the U.S.A. Army Institute of Pathology Files. In 1956 Smith reviewed twenty-one cases which included the seven of Smith and Custer. Over recent years the condition has been documented more frequently; I have found references to fourteen cases in the last three years and presumably many more cases have not been documented. The most recent reports in the English Journals are by Freeman (1962), Wetherill and Oldfield (1963), and Smith (1965).

Case Report

A schoolgirl, aged 15, was being driven in the back seat of a car when she experienced moderately severe lower abdominal pain. As she climbed out of the car she collapsed to the ground. She was carried into Casualty approximately ten minutes later.

On Examination she complained of diffuse abdominal pain and a feeling of faintness. She appeared extremely pale, her respiratory rate was increased, her pulse rate was 120/min., and her systolic blood pressure was 70 mm. Hg. Her abdomen was slightly distended and diffusely tender; there was no abdominal rigidity or guarding. Her bowel sounds were normal. At no time did she complain of shoulder pain despite the foot of the bed being raised. Portable X-rays of the chest and abdomen in the supine position appeared normal although their diagnostic quality was only moderate.

The clinical picture was of an acute haemoperitoneum and the diagnosis of a ruptured ectopic pregnancy was considered. However, her periods were normal, she showed no signs of pregnancy, she was judged to be *virgo intacta*, and on rectal examination no pelvic tenderness could be elicited. In view of her previous good health prior to the onset of the abdominal pain and the absence of any abdominal trauma, it was felt that she might be bleeding from an ovarian tumour.

Soon after reaching Casualty her condition improved considerably, but after one hour, whilst

lying on the observation couch her blood pressure again dropped and she collapsed. After rapid blood transfusion she was taken to theatre.

Operation. Through a right lower paramedian incision several pints of blood were removed from her peritoneal cavity. Her pelvis was examined and no bleeding point was found. A hand was then passed into the upper abdomen and a perisplenic haematoma palpated.

After extending the incision into the epigastrium the spleen was removed. Two superficial stellate lacerations were found on the diaphragmatic convex surface of the spleen. The lacerations were surrounded by adherent blood clot which extended under the remaining splenic capsule. The spleen weighed 340g. and felt extremely soft and flabby. Two other abnormalities were found in the abdomen; one was moderate enlargement of the mesenteric lymph glands, the other was slight enlargement of a tense liver. The abdomen was closed with a left flank drain.

Immediately after operation the pathologist reported on a blood count taken just before the operation. The haemoglobin was 80%, the total white cell count was 20,000/cu. mm. with 50% lymphocytes. There were no obvious atypical white cells and the number of platelets was reported as normal. The suspicion of infectious mononucleosis was confirmed by a positive Paul Bunnell (the titre after absorption with guinea-pig kidney was 1 in 448). Later the typical histological changes in the spleen were demonstrated.

Her postoperative recovery was straightforward apart from an unexpectedly high pulse rate which persisted for fourteen days after operation; for instance on the tenth day she was afebrile and appeared perfectly well, but she had a sleeping pulse of 110 per minute. A diagnosis of myocarditis was considered but, with an SGOT of 48 S.F. units/ml. and a normal ECG, this could not be substantiated. Her liver function tests were normal and at no time could any lymph glands be palpated. Her throat appeared normal.

When she was well and the diagnosis known, she was again questioned. She admitted to a sore throat which lasted for four days and had cleared up two days before admission to hospital as an emergency. Apart from her sore throat she had been perfectly well in the few weeks preceding admission. Her boyfriend had suffered from proven infectious mononucleosis four months previously.

After four weeks in hospital she was allowed home. At this time she showed no clinical abnormality, her pulse rate and temperature had settled, and although her ESR was still high (50 mm. in 1 hour) it was falling satisfactorily.

Discussion

Infectious mononucleosis usually runs a benign course. Death from this condition is rare but the commonest cause of death is from rupture of the spleen. Many complications of infectious mononucleosis have been described. These are caused by infiltration of various tissues by mononuclear cells. Some of the tissues which can be affected in this way include lymph nodes, spleen, liver, the nervous system, lungs, heart, kidney, eye and the skin.

The histological changes that occur in the spleen were summarised by Smith and Custer:—

1. Blurred architecture due to atypical lymphocytes diffused throughout the pulp and lymph sinuses.
2. Small poorly developed follicles.
3. Infiltration of the splenic capsule and trabeculae by monocytes and lymphocytes.
4. Swelling of the cells lining the blood sinuses.

Smith and Custer (1946) state that these changes, which make the spleen friable, take a few weeks to develop. This would account for the commonest time of spontaneous rupture being the third to fourth week of the disease.

In most cases there are symptoms referable to infectious mononucleosis prior to the rupture. However, the preceding illness may be very mild and the symptoms of it may be difficult to obtain from a severely ill patient. Several splenic ruptures have occurred while the patient was in hospital often with the diagnosis of infectious mononucleosis. Writers stress the need to avoid splenic palpation in patients suspected of suffering from infectious mononucleosis for fear of injuring the spleen.

Smith (1956) believed that an initial bleed may occur into the sub-capsular layer. This would be followed by further sub-capsular bleeds finally ending with a massive intra-peritoneal haemorrhage. This would explain the clinical picture of several episodes of pain and mild shock preceding the final catastrophic episode as described in many cases. However, in a few cases death has been very rapid from the onset of abdominal symptoms. An interval of twenty minutes was described by Stobbe (1952).

The treatment of this condition is blood transfusion and splenectomy. However, the picture can be complicated by conditions which need specific treatment such as thrombocytopenia (Wetherill and Oldfield 1963) and haemophilia (Smith 1965).

The mortality rate in the cases described by

Smith and Custer (1946) was just over 50%. The rate in the twenty-one cases described by Smith (1956) was just over 33%. The impression gained from recent cases is that the mortality rate is improving.

In cases of spontaneous rupture of the spleen one must look for histological evidence of infectious mononucleosis. Smith and Custer (1946) reviewed forty-four cases of spontaneous splenic rupture; 50% of cases complicated spleens affected by malaria and approximately 15% of cases complicated spleens affected by infectious mononucleosis. Other less common causes mentioned are Banti's syndrome, splenic torsion, and leukaemia. This left 15% of cases with no obvious pathology.

Conclusion

Spontaneous rupture of the spleen in infectious mononucleosis is rare but a well-documented condition. It must be considered in any case of spontaneous acute haemoperitoneum. Points to look for include any recent symptoms suggestive of infectious mononucleosis; a sore throat is very important in this respect. On examination the oropharynx should be inspected and all superficial lymph glands, especially those in the posterior cervical triangle, palpated. If time permits a routine blood count may help, and a screening serological test for infectious mononucleosis (i.e. the unmodified Paul Bunnell test) can be completed within a few minutes.

I would like to thank Mr. R. Ramsay for permission to report the details of this case admitted under his care.

REFERENCES

- FREEMAN, A. R. M. (1962): Rupture of the Spleen in Infectious Mononucleosis, *Brit. med. J.*, ii, 96.
- FRIESLEBEN, M. (1922): Ein durch Splenectomie geheilter seltener Fall von Spontanrupture der Milz, *Dtsch. Z. Chir.*, 173, 45.
- SMITH, E. B., and CUSTER, M. C. (1946): Rupture of the Spleen in Infectious Mononucleosis, *Blood*, 1, 317.
- SMITH, J. N. (1956): Complications of Infectious Mononucleosis, *Ann. intern. Med.*, 44, 861.
- SMITH, P. H. (1965): Management of Splenectomy in Haemophilia: Cast of Spontaneous Rupture of the Spleen Due to Glandular Fever in a Haemophilic, *Brit. med. J.*, i, 296.
- infectiosa, *Z. ges. inn. Med.*, 7, 1026.
- STOBBE, H. (1952): Milzrupture bei Mononucleosis WETHERILL, J. H., and OLDFIELD, M. C. (1963): Rupture of the Spleen, and Thrombocytopenia, in Glandular Fever, *Lancet*, i, 636.