the presenting symptoms: a psychological male with some very prominent female characteristics sought medical attention only when the menarche, with resultant haematuria and concurrent abdominal pain, occurred. Both the presenting symptoms settled without specific therapy, but the nature of the cystic mass felt in the right iliac fossa was not determined; it may have been a cyst of the corpus luteum since the patient was known to have ovulated. After 35 days the haematuria and abdominal pain reappeared. This, and the finding of a large uterus with proliferative endometrium, makes the assumption that the haematuria was indeed menstrual flow quite tenable. Bilharziasis as the cause of the haematuria was considered unlikely because of the cyclical occurrence of the bleeding and the inactive, calcified state of the ova. The finding of a large, undivided uterus is contrary to the cases recorded by Jones where rudimentary or bicornuate uteri were found in 9 of 11 hermaphrodites with bilateral ovotestes.

The degree of mosaicism was found to be approximately 50% in the chromosome preparations from cultured lymphocytes. It is felt that this demonstration of sex-chromosome mosaicism in a single tissue is suggestive enough that the cause of the hermaphroditism is the presence of both XX and XY cell lines. However, further discussion of the significance of the XX/XY status is not offered here. Theories of its origin and the role of the human Y chromosome in sex determination may be found at length in other works. The sex-chromatin pattern was found to be of the female type, as is the case in most bilateral hermaphrodites. Overzier reports that 13 of 16 were chromatin positive.

PERITONITIS AND BANTU SIDEROSIS*

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The relationship between siderosis and tissue damage has been extensively investigated and discussed, particularly with regard to the liver. Despite this, there is still considerable controversy whether even very large iron deposits in the tissues are harmful. This paper describes 21 cases of peritonitis found in African subjects at autopsy. In none of these was there a primary focus of infection and all but one had marked siderosis. It is suggested that there is a causal relationship between advanced degrees of siderosis and unexplained peritonitis.

MATERIAL AND METHODS

The cases described were seen among 5,529 autopsies performed at Harari Hospital, Salisbury, between January 1963 and June 1969. In all 21 cases in which peritonitis was found a focus of infection was carefully sought, both macroscopically and microscopically at the time of autopsy, in particular in the uterine tubes. Sections of liver, spleen, pancreas and kidneys, stained with H & E and Perl's method for iron, were examined as routine. The degree of iron deposition in liver and spleen seen histologically was graded using the method of Bothwell and Bradlow. Pancreatic iron deposits were graded as previously described. Inquiries were made regarding the presence of abdominal pain or guarding during the patient's terminal illness because these clinical features are frequently absent in the peritonitis associated with cirrhosis. The term 'cirrhosis' as used in this article includes portal and post-necrotic types of cirrhosis but does not include biliary fibrosis.

RESULTS

Table I gives, for each case, the sex, age, histological iron content of liver, spleen and pancreas, and the cause of death and any abdominal signs or symptoms noted clinically.

The amounts of fluid in the peritoneal cavity varied from 100 to 800 ml. In all cases the fluid was thin and turbid and in some it had a brownish colour. Large numbers of neutrophile leucocytes were seen microscopically. The serosa of the bowel was usually moderately congested. In no case was there much fibrinous material on the surface of the bowel and the loops of bowel were not matted together.

SUMMARY

A Bantu hermaphrodite with bilateral ovotestes, positive sex-chromatin pattern and XX/XY sex-chromosome mosaicism is reported. Haematuria was a presenting sign, and was in fact the menarche; a further menstrual episode occurred 35 days later. Clinical and histological findings are reported. A table recording 19 true hermaphrodites—all Bantu—from South Africa and Rhodesia is given.

We wish to thank Mr R. Stuart of the Medical Illustration Department of the Natal University Medical School for the photographs, and the Medical Director of the Natal Institute of Immunology and the Medical Superintendent of King Edward VIII Hospital for their permission to publish this article.

REFERENCES

5. Medical Research Council Committee on Clinical Endocrinology (1951): Lancet, 2, 585.

*Date received: 15 July 1969.
Three cases had cirrhosis and one had bilharzial fibrosis. The remaining 7 cases had normal portal areas or showed the slight fibrous thickening of the portal areas which is a very common finding in Rhodesian Africans with both normal and raised iron stores. One patient had a chronic pyelonephritis but without uraemia.

Except for one patient, who died as a result of rupture of oesophageal varices, the proximate cause of death was thought to be acute peritonitis. In many subjects with cirrhosis it was believed that liver failure might have been an important contributing factor in causing death. There was no record of abdominal pain or guarding in these 13 patients.

**DISCUSSION**

Unexplained peritonitis can occur in cirrhotic patients with normal iron stores and in chronic nephritis. Possibly the mechanism of production of the peritonitis in cirrhotic patients could also be responsible for the peritonitis in the subject with bilharzial fibrosis, but it would not explain its occurrence in the 6 patients without either cirrhosis or bilharzial fibrosis. If the iron played no part in producing the peritonitis it is difficult to understand why such unexplained peritonitis occurred in only one patient who had cirrhosis without raised iron stores. It should be borne in mind that cirrhosis with normal, or only slightly raised, iron stores is fairly common in Rhodesia.

It seems that severe siderosis was in some way responsible for the peritonitis found in the cases described. It is conceivable that grossly excessive iron stores lower the body’s resistance to infection. This may result from blocking of the reticulo-endothelial system by large inert iron-containing molecules. Bacteria from the lumen of the bowel might be allowed to enter the blood stream instead of being phagocytosed in the bowel wall. Such a blocking of the reticulo-endothelial system was suggested by Gillman and Gillman as an explanation of the rapid progress of tuberculosis in the African. Bacteria entering the portal blood would normally be filtered off in the liver. This would be less effective in cirrhosis due to the collateral circulation and in siderosis due to blocking of the Kupffer cells, and such bacteria could enter the systemic circulation.

It is also of interest to note that a similar kind of peritonitis has been described in other forms of iron overload; e.g. in haemochromatosis and in haemosiderosis. Less than half of the patients complained of abdominal pain, a fact that has sometimes been observed in the peritonitis associated with cirrhosis.

**SUMMARY**

Twenty-one cases of idiopathic peritonitis are described. In 20 there was severe Bantu siderosis. It is believed that the siderosis was an important aetiological factor in producing the peritonitis.

**REFERENCES**


**TABLE 1. ANALYSIS OF CASES**

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*HC = hepatic cells; KC = Kupffer cells; PA = portal areas.