at least 15 months up to the time of writing. The remote possibility that constrictive pericarditis may develop later must be borne in mind.

Summary

Three cases of pericardial involvement in Reiter's syndrome are described.

The symptoms of this complication are not always prominent, and for this reason electrocardiography should be a routine procedure in cases of Reiter's syndrome.

A case of abacterial pyuria with pericarditis is also reported.

This work was undertaken as part of the M.R.C. research on non-specific urethritis with a grant-in-aid from the National Institute of Health of the United States Public Health Service Contract No. E652. We thank Dr. C. Young, of St. Mary's Hospital, and Dr. David Lewes, of Bedford General Hospital, for permission to study their patients, and Dr. William Evans, Mr. A. J. King, Dr. G. L. M. McElligott, and Dr. Wallace Bridgen for their valuable help.

REFERENCES

- Bang, O. (1940). *British Medical Journal*, 1, 117.
Candel, S., and Wheelock, M. C. (1954). *Ann. intern. Med.*, 23, 309.
Feiring, W. (1946). *Ibid.*, 25, 498.
Gadrat, J., and Morel, L. (1935). *Bull. Soc. franç. Derm. Syph.*, 42, 1849.
Harkness, A. H. (1950). *Non-Gonococcal Urethritis*. Livingstone, Edinburgh.
Lever, W. F., and Crawford, G. M. (1944). *Arch. Derm. Syph. (Chicago)*, 49, 389.
Lövgren, O., and Masreliez, N. (1949). *Nord. Med.*, 42, 1299.
Mayne, G. O. (1955). *Brit. J. vener. Dis.*, 31, 238.
Paronen, I. (1948). *Acta med. scand.*, Suppl. 212.
Shapiro, E., Lipkis, M. L., Kahn, J., and Heid, J. B. (1949). *Amer. J. med. Sci.*, 217, 300.
Sokoloff, L. (1953). *Amer. Heart J.*, 45, 635.
Trier, M. (1950). *Acta med. scand.*, 138, Suppl. 239, p. 123.
Weinberger, H. J., Dienes, L., and Bauer, W. (1952). In *American Rheumatism Association's Rheumatic Diseases*, p. 73. Saunders, Philadelphia.

Medical Memorandum

Strangulation of Umbilical Hernia in Children

The infantile type of umbilical hernia is rightly regarded as a benign condition and complications are very rare. A few cases of spontaneous rupture have been reported (MacLean, 1950; Strange, 1956), but strangulation of bowel in such a hernia is even more uncommon. Indeed, Browne (1952) wrote that he was unable to find a record of such an occurrence, and Woods (1953) could find no case in the records of the Bristol hospitals.

I have been able to find only two reports of strangulated umbilical hernia in children. Miller (1932) included one child of 2 years of age in his series of 60 cases of strangulated umbilical hernia seen at the Massachusetts General Hospital from 1911 to 1930; and Crump (1952), in his series of 329 cases of umbilical hernia in American Negro children, mentioned a case of strangulation in a 17-months-old girl.

Two cases of strangulated umbilical hernia have been seen at this hospital during the last six years, and in view of the rarity of the condition a brief report is considered justified.

CASE 1

A boy was admitted to hospital with oedema and albuminuria when he was 2 years old. He was found to be suffering from the nephrotic syndrome. Soon after admission he developed gross ascites, and the presence of a large umbilical hernia was recorded in the case notes. During the next two years numerous abdominal paracenteses were necessary to relieve the distress caused by large accumulations of fluid in the peritoneal cavity. He never showed evidence of renal insufficiency.

When he was 4 years old he was readmitted to hospital with a two-days history of abdominal pain and vomiting.

Examination showed that the umbilical hernia, which had previously been easily reducible, was hard and could no longer be reduced. Apart from some oedema his general condition was good, although he was noticed to have muscular twitchings. As his serum calcium was found to be low he was given intravenous calcium chloride and the twitchings ceased. An intravenous transfusion of glucose water was started pre-operatively.

Under general anaesthesia an incision was made around the protuberant umbilical mass. The underlying tissues were dissected until a loop of bowel was seen which was constricted by a defect in the linea alba. The bowel was congested, but was considered to be viable. The constricting ring was divided, following which there was a gush of fluid from the peritoneal cavity. The child's condition rapidly deteriorated and he died a few minutes later. No cause for the sudden collapse and death was found at necropsy.

CASE 2

A boy, who had been born three months prematurely, was seen as an out-patient when he was 3 months old on account of umbilical and right-sided inguinal hernias. Adhesive strapping was applied to the umbilical hernia, but it is not known how long this was maintained. It was proposed to repair the inguinal hernia when he was older.

Two months later, however, he was admitted to hospital as an emergency because for nine days he had been having attacks of screaming during which he drew up his legs, and his mother noticed that the umbilical swelling had increased in size and had become bluish in colour. The baby had vomited a little and had been constipated.

On examination his general condition was very good and he weighed 12½ lb. (5.8 kg.). There was a large bluish protrusion at the umbilicus which could not be reduced. The inguinal hernia was easily reducible.

An operation was performed at once, and the hernial sac was found to contain a loop of very oedematous but viable bowel and a mass of omentum in which there was a haematoma. The obstruction was relieved and the baby made a rapid recovery.

Two weeks later he was readmitted because the inguinal hernia had become incarcerated. This was successfully relieved by operation.

COMMENT

In Case 1 there was presumably a congenital weakness of the umbilical scar, and raised intra-abdominal pressure, due to the large accumulation of ascitic fluid, resulted in herniation through the scar. The natural tendency for this type of hernia to resolve spontaneously in children (Woods, 1953) would also be unlikely to occur because of the constant increase of pressure in the abdomen. Local distension of the loop of bowel in the hernia, or adhesions due to the many paracenteses, may have been the factors precipitating the strangulation. No cause for the sudden collapse and death of the patient was evident at necropsy, but it may have been due to the sudden release of fluid from the peritoneal cavity.

The umbilical hernia of Case 2 was the usual infantile type, and there appeared to be no factor precipitating the strangulation.

It has been shown that adhesive strapping hastens the resolution of large umbilical hernias (Haworth, 1956), and the fact that strangulation does very rarely occur is perhaps an additional reason for strapping these cases.

Case 1 was admitted under the care of Mr. R. B. Zachary and Case 2 under Mr. W. J. Lytle, to both of whom I am grateful for permission to publish.

J. C. HAWORTH, M.B., M.R.C.P., D.C.H.,
Senior Medical Registrar, The Children's Hospital, Sheffield.

REFERENCES

- Browne, D. (1952). *British Medical Journal*, 2, 1144.
Crump, E. P. (1952). *J. Pediat.*, 40, 214.
Haworth, J. C. (1956). *British Medical Journal*, 1, 1286.
MacLean, A. B. (1950). *Brit. J. Surg.*, 38, 239.
Miller, R. H. (1932). *New Engl. J. Med.*, 206, 389.
Strange, S. L. (1956). *Postgrad. med. J.*, 32, 39.
Woods, G. E. (1953). *Arch. Dis. Childh.*, 28, 450.