PANCREATIC EXTRACT IN NEONATAL TREATMENT OF MECONIUM ILEUS

Report of a case.

Lieutenant-Colonel N. G. KIRBY, M.B., Ch.B., F.R.C.S., R.A.M.C.

Captain B. H. VALENTINE, M.B., B.S., M.R.C.S., L.R.C.P., R.A.M.C.

British Military Hospital, Dhekelia, Cyprus

SUMMARY: The use of pancreatic extract as an adjunct to surgery in the neonate with meconium ileus is discussed, and a case is described illustrating its value. After operation no bowel action was seen for six days, but twelve hours after oral pancreatic extract had been given a green meconium stool was passed.

Introduction

Meconium ileus is a complication and early sign of fibrocystic disease of the pancreas. Cystic fibrosis (CF) is the most common lethal genetic disease of childhood in Caucasians, with an incidence of 1 in 2448 (Danks, Allen and Anderson, 1965). The treatment of meconium ileus is initially surgical to relieve the obstruction, with follow-up arranged by the paediatrician. The use of pancreatic extract has been recommended in childhood (Norman and Gibbons, 1968), but has not been recommended routinely following surgery in neonates. A case illustrating its value following surgery is described.

Case history

Baby 'B' was born on 28 April 1968 at 1820 hours with a birth weight of 6 lb 5 oz. During the first twenty-four hours the baby had not passed meconium, and had not taken to the breast. At thirty-eight hours the abdomen was distended, with obstructive bowel sounds, but no mass was palpable. The child vomited bile-stained fluid at this time. Rectal examination proved a patent anus, but no meconium was seen on the finger, only a tenacious mucus. Inverted abdominal X-rays, with a soft rectal catheter in situ, confirmed patency to the descending colon. The small intestinal shadow showed grossly distended loops of small bowel. Tryptic activity in the mucus passed per rectum was less than five units, and in the aspirated gastric contents (corrected for pH) was Nil. Laparotomy was performed forty hours after birth and revealed a typical meconium obstruction of the terminal 18 inches of the ileum. The last four inches were full of small 'stone-like' pellets whilst proximally it was grossly distended with a putty-like mass. Enterostomy was performed six inches from the ileo-caecal valve. A narrow polythene catheter, inserted between the meconium mass and the ileal wall, was passed proximally and 1 per cent hydrogen peroxide solution was slowly injected. The mass separated from the ileal wall and was expressed in one piece. The catheter was then passed distally to clear the meconium pellets, and the ascending colon. The immediate use of pancreatic extract was discussed, but was not pursued. The child had a stormy postoperative course, his weight dropping to 6 lb on the sixth postoperative day. He had passed only a few blobs of khaki-coloured jelly-like mucus and the abdomen was again distended. It was decided to give him oral pancreatic extract, and to commence colonic washouts with 1 per cent hydrogen peroxide solution at five ml/hr. Within six hours the child had passed pellets of mucus per rectum. Twelve hours after, he had his first proper bowel motion, passing

viscid green meconium, and normal meconium three hours later. From this point bowel actions have been regular and controlled by adjusting dose of extract.

Sweat tests confirmed the diagnosis of mucoviscidosis, the results being:— 6 June 1968 Na^+ 100, K^+ 22, Cl^- 118. 17 June 1968 Na^+ 130, K^+ 20.4, Cl^- 125 (all values in mEq/l).

Faecal fats were 5 gm/day five days after starting treatment with pancreatic extract, but have remained normal since the dose was increased. The child is, at the time of writing, 6 months old and extremely healthy (weight 15 lb). It has so far had no chest complications, in spite of living in a climate where upper respiratory tract infections are prevalent.

Discussion

It has been shown that the protein content in meconium ileus is 85 per cent against a normal 7 per cent (Buchanan and Rapoport, 1952). This is mainly composed of albumin and if human serum is added to normal meconium it will attain the viscosity of meconium ileus stools (Young, Schwert and Harris, 1958). This viscosity accounts for the difficulty in extracting the meconium at operation. After injecting 1 per cent hydrogen peroxide solution the ileal wall/meconium adhesion is broken down by the oxygen bubbles and water produced. To digest any meconium not removed surgically it is recommended that pancreatic extract is left in the ileum at the time of operation. Administration of oral extract is commenced postoperatively to clear the proximal bowel and to restore normal digestion.

A long-term factor is the absorption of the fat-soluble vitamins, and although we can offer no experimental evidence of a chronic vitamin A deficiency aggravating the classical complications of mucoviscidosis (di Sante' Agnese, Powell and Talamo, 1967) on the respiratory epithelium, it is an interesting conjecture. This factor would also favour the early and continuous use of pancreatic extract.

REFERENCES

- BUCHANAN, D. J. and RAPOPORT, S. (1952). *Pediatrics* **9**, 304.
DANKS, D. M., ALLEN, I. and ANDERSON, C. M. (1965). *Ann. hum. Genet.* **28**, 323.
DI SANTE AGNESE, P. A., POWELL, C. F. and TALAMO, R. C. (1967). *New Engl. J. Med.* **277**, 1287.
NORMAN, A. P. and GIBBONS, I. S. E. (1968). *Brit. med. J.* **ii**, 261.
YOUNG, D. M., SCHWERT, G. W. and HARRIS, J. S. (1958). *Proc. Soc. exp. Biol. (N.Y.)*, **99**, 673.

Mitchiner Medal

The Mitchiner Medal of the Royal College of Surgeons of England, for 1970, has been awarded to **Colonel M. M. Lewis, M.D., M.Sc., D.I.H., D.P.H., D.T.M. & H., late R.A.M.C.**

Appointments to The Queen

Major-General D. G. Levis, O.B.E., B.A., M.B., D.P.H., has been appointed Honorary Physician to The Queen, in succession to Major-General A. MacLennan.

Major-General J. M. Matheson, O.B.E., T.D., M.D., M.R.C.P., F.R.C.S., has been appointed Honorary Surgeon to The Queen, in succession to Brigadier H. N. Perkins.

Brigadier A. F. H. Keatinge, M.C., M.B., D.P.H., has been appointed Honorary Physician to The Queen, in succession to Lieutenant-General Sir Robert Drew.

Colonel J. H. H. Oliver, T.D., M.R.C.S., L.R.C.P., Late R.A.M.C., T. & A.V.R., has been appointed Honorary Surgeon to The Queen, in succession to Colonel C. Weymes.

Order of St. John of Jerusalem

Those recently appointed to, or promoted in, the Most Venerable Order of the Hospital of St. John of Jerusalem include the following:—

As Commanders (Brothers). Major-General R. M. Johnstone, M.B.E., M.C.

As Officers (Brothers). Colonels C. F. Murison, H. G. Skinner. Lieutenant-Colonels A. R. Worthington, C. M. Samuel, M.B.E. (Now deceased).

As Serving Brothers. Major D. W. J. O'Neill, T.D.

Honorary Consultants to the Army at Home

Psychiatry

Dr. A. D. Leigh, M.D., B.Sc., F.R.C.P., has been appointed Honorary Consultant in Psychiatry to the Army at Home as from 23 July 1969.

Child Psychiatry

Dr. W. Warren, M.A., M.D., M.R.C.P., D.P.M., has been appointed Honorary Consultant in Child Psychiatry to the Army at Home as from 18 July 1969.

ACADEMIC ACHIEVEMENTS

M.D.(Birm.)	MAJOR D. M. WAYTE, M.B., Ch.B., M.C.Path., D.T.M. & H., R.A.M.C.
F.R.C.P.(Lond.)	COLONEL S. E. M. JARVIS, M.B., Ch.B., M.R.C.P., D.C.H., L/R.A.M.C.
M.R.C.P.	MAJOR W. D. MASSON, M.B., Ch.B., D.T.M. & H., D.C.H., R.A.M.C.
M.C.Path.	MAJOR J. B. STEWART, M.B., Ch.B., D.C.Path., D.T.M. & H., R.A.M.C.
F.F.A.R.C.S.	MAJOR G. W. MORRISS, M.R.C.S., L.R.C.P., D.T.M. & H., D.A., R.A.M.C. MAJOR J. P. C. M. BROOKES, B.A., L.M.S.S.A., R.A.M.C. CAPTAIN G. D. HOUSAM, M.B., Ch.B., M.R.C.S., L.R.C.P., R.A.M.C.
D.Obst.R.C.O.G.	CAPTAIN T. V. BARROW, M.B., B.S., R.A.M.C. CAPTAIN M. A. A. CLARK, M.B., B.S., R.A.M.C. CAPTAIN N. B. HOGAN, M.B., B.Ch., B.A.O., R.A.M.C.
D.P.H.	MAJOR G. M. STEWART, M.B., Ch.B., D.T.M. & H., R.A.M.C.
D.Phys.Med.	MAJOR C. BOLAND, M.D., R.A.M.C.
Dip.Soc.St.(Lond.)	LIEUTENANT W. STEWART, S.R.N., R.M.N., R.A.M.C.
B.Sc.(Lond)	MR. N. R. H. BURGESS, F.R.E.S. (Second Class Honours in Geography and Zoology).