Novel treatment (new drug/intervention; established drug/procedure in new situation)

Conservative management of a high output enterocutaneous fistula in abdominal tuberculosis

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Summary

A 25-year-old lady with a high-output, tuberculous, entero-cutaneous fistula was managed successfully by conservative means in a teaching hospital in Nairobi, Kenya.

BACKGROUND

A high-output enterocutaneous fistula is usually associated with significant morbidity with a mortality of up to 20%. In a tuberculous frozen abdomen, conservative management may be the only available course of action, but it requires cost-effective care and improvisation to overcome the limitations of a non-specialised unit in a developing country.

The case highlights these challenges and role of improvisation.

CASE PRESENTATION

A 25-year-old lady presented 4 months after delivery, with a non-healing infected episiotomy wound, abdominal discomfort, distension and fever. An ultrasound examination showed a complex lower abdominal and pelvic mass with ascites. On abdominal CT, the mass was regarded as comprising matted omentum, small bowel loops and enlarged mesenteric lymph nodes. Serum CA-125 and the ascitic fluid cytology were negative for ovarian cancer. HIV serology was negative. The patient was started on empirical antituberculous therapy, but persistent fever, progressive abdominal discomfort and distension led to a laparotomy, which revealed a frozen abdomen. Peritoneal biopsy showed granulomatous inflammation with acid fast bacilli. Postoperatively she developed an enterocutaneous fistula with an initial external opening in the right iliac fossa (RIF). On transfer to our unit, 2 weeks postsurgery, she was found to be in severe sepsis: pulse 136/min, blood pressure 95/52 mm Hg, temperature 38.6°C, respiratory rate 30/min. She was emaciated, jaundiced and had enlarged cervical lymph nodes. The faeculent discharge from the fistula in the RIF was accompanied by a fluctuant swelling under a vertical subumbilical incision scar which discharged feculent material on the second day. She had deranged acid-base status, liver and renal dysfunction and anaemia (table 1).

The patient lost 10 kg body weight in the first month of admission (from 45 to 35 kg). Nutritional requirements were estimated and delivered through a combination of parenteral feeds, that is, Kabiven (emulsion of fat, glucose monohydrate, minerals and amino acids) and nasogastric tube (NG) feeding, that is, Survimed (unflavoured liquid

consisting of peptides, maltodextrin, modified starch, soya, medium chain triglycerides, linseed, fish oils, vitamins, minerals and trace elements). The daily fluid and electrolyte losses were replaced.

Parenteral feeding was stopped within the first 3 weeks because of persistent fever in an effort to control potential line sepsis; NG feeding was concurrently increased.

Intravenous rifampicin 400 mg/day and isoniazide 200 mg/day and intramuscular streptomycin 600 mg/day were administered.

The total fistula output per day ranged between 2 and 4 l. A sump suction was devised using a 32 FG thoracostomy tube and an 8 FG feeding tube as a vent. The larger tube was connected to continuous low volume suction (2.5–4 kPa) (figure 1).

Recurrent blockage of the sump system by debris was overcome by saline irrigation through the vent and regular cleaning of the system. A fistulogram in the 4th week confirmed the presence of a residual intra-abdominal cavity with some contrast going into the jejunum; distal small bowel continuity could not be demonstrated.

Table 1 Serum biochemistry and haemoglobin

K+	1.7 mmol/l (3.3–5.4)
Na+	135 mmol/l (136–145)
Urea	9.4 mmol/l (2.1–7.1)
Mg	0.46 mmol/l (0.8–1.2)
Creatinine	92 µmol/l (74–110)
Total bilirubin	111 µmol/l (5.1–17.0)
Direct bilirubin	72 µmol/l (1.7–5.1)
γ-GT	28 U/l (1–94)
Alp	74 U/l (30–120)
SGOT	51 U/l (0–35)
SGPT	15 U/l (0–35)
INR	3.07 (0.1–1)
Total protein	64 g/l (55–80)
Albumin	23 g/l (35–55)
pH	7.30 (7.38–7.44)
pO ₂	60 mm Hg (80–100)
pCO ₂	30.2 mm Hg (35–45)
HCO ₃	15 mmol/l (21–28)
Haemoglobin	7.42 g/dl (12–16)

Figure 1 Cross-sectional diagram of the improvised sump system comprising a soft thoracic catheter (C) connected to low wall suction (A) and a small feeding tube for ventilation (B).

TREATMENT

She received intravenous fluid resuscitation, meropenem 1.5 g three times daily, metronidazole 500 mg twice daily and potassium supplement. She was transfused two units of packed red-cells. A repeat abdominal CT scan confirmed a large intra-abdominal collection which was drained percutaneously. The fistula opening in the RIF closed down as the sub-umbilical fistula persisted.

OUTCOME AND FOLLOW-UP

Towards the end of the second month, the patient was passing small amounts of loose stools intermittently, which became formed and more regular in the last 2 weeks before discharge. She was now on oral feeds and nasogastric feeding was discontinued prior to discharge on day 90. There was only minimum discharge from the fistula requiring once daily dressing change which ceased completely within 2 weeks of going home.

DISCUSSION

Diagnostic abdominal surgery in active peritoneal tuberculosis in the setting of a frozen abdomen risks creating a high volume enterocutaneous fistula. As far as possible diagnosis should rest on surrogate TB markers, for example, elevated erythrocyte sedimentation rate, serum-to-ascites albumin gradient of less than 1.1; ascitic adenosine deaminase >35 U/l; and detection of TB DNA in the ascitic fluid by PCR.¹ Serum markers and ascitic fluid cytology are important to rule out malignancy.^{2–3} Findings on abdominal CT scan include ascites, peritoneal, mesenteric, omental thickening and/or mass formation; lymphadenopathy, bowel wall thickening and solid organ involvement.⁴

Empirical antituberculosis treatment in the presence of clinical evidence is a useful alternative to diagnostic surgery.

Resuscitation, nutritional support, targeted antibiotic therapy and adequate drainage of any intra-abdominal collection,^{5–6} selective use of octreotide and efficient collection of the effluent with skin protection are the basic tenets of care for a high output enterocutaneous fistula. A carbapenem was justified in our patient because she had already received first line antibiotics against gut organisms.⁷ Persistent fever despite drainage of the intra-abdominal collection and discontinuation of the central line could possibly be attributed to the underlying tuberculosis. It is also possible that microtrauma from the sump with bacteraemia/endotoxaemia may have been contributory although blood cultures were repeatedly negative.

The improvised sump permitted quantification of fistula losses and control of the effluent with skin salvage. At the same time an anatomically unfavourable fistula was converted to a favourable one with a long and narrow tract that closed spontaneously.^{5–6}

The nutritional requirement in our patient was achieved through the parenteral route as well as early enteral feeding. The cost of parenteral feeding was several times higher than enteral feeding and had to be discontinued on suspicion of line sepsis. In the absence of an elemental diet, a semi-elemental diet was used with good effect in our patient. Starting enteral feeding early enabled the parenteral nutrition to be discontinued.

Learning points

- ▶ Surgery in a tuberculous frozen abdomen is fraught with the risk of an enterocutaneous fistula.
- ▶ Once a high output fistula develops, perseverance with conservative management is advisable.
- ▶ The course of illness is usually protracted and complicated, and requires cost-effective care with improvisation such as with semi-elemental enteral feeding and a locally constructed sump drain in the present case.

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Competing interests None.

Patient consent Obtained.

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