

Successful treatment of enterocutaneous fistula in a premature newborn by using octreotide

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SUMMARY: Büyükyavuz İ, Karnak İ, Yiğit Ş, Tanyel FC. Successful treatment of enterocutaneous fistula in a premature newborn by using octreotide. Turk J Pediatr 2004; 46: 289-291.

A premature newborn with an enterocutaneous fistula after repair of duodenal perforation is reported to emphasize the therapeutic effect of octreotide in persistent fistula even in a very small infant.

Our report showed that use of octreotide was safe even in premature infants with intestinal fistula. Close monitorization of biochemical and blood parameters is needed in patients treated with octreotide.

Key words: enterocutaneous fistula, newborn, octreotide, premature.

The mainstay of treatment of enterocutaneous fistulas includes decompression of the gastrointestinal system, replacement of fluid and electrolyte losses and parenteral nutrition. Despite conservative therapies, some fistulas persist and require surgical treatment. Although controversies exist about the success rate, somatostatin and its analogues have been used in the treatment of persistent enterocutaneous fistulas in adults, and rarely in children¹⁻⁵. Herein, we report a premature newborn case with persistent enterocutaneous fistula who was treated successfully with a somatostatin analogue.

Case Report

A 24-day-old, 1200 g premature male newborn developed abdominal distension and bilious vomiting shortly after delivery. He was born to a 22-year-old healthy woman following 30 weeks of gestation. He had respiratory distress syndrome and received surfactant therapy and broad-spectrum antibiotics.

Physical examination revealed a distended abdomen without abdominal tenderness and abdominal wall erythema. Plain upright abdominal radiograph showed subdiaphragmatic free air, and the newborn was taken to the operating room with the diagnosis of intestinal perforation. At operation, there was a perforation at the posteromedial aspect of the second part of the duodenum. Perforation was repaired in

two layers and a Penrose drain was placed. The drain was removed on the 6th postoperative day. Two days later, bilious drainage from drain site was observed and an upper gastrointestinal series demonstrated an enterocutaneous fistula originating from the repaired duodenum (Fig. 1). Medical therapy consisting of



Fig. 1. Upper gastrointestinal series showing fistula site (arrow) without distal obstruction.

nasogastric decompression, peripheral parenteral nutrition and antibiotics was started. As conservative management did not provide a decrease in fistula output (20-30 ml/day), octreotide (Sandostatin) was started on the 24th postoperative day. The initial dosage was 1.4 µg/kg/day (divided into two, subcutaneous route) and was then increased gradually to 4.8 µg/kg/day. The fistula output significantly decreased to 5 ml/day by the third day of octreotide treatment and stopped on the 7th day. Complete blood count, liver enzymes, and blood glucose levels were within normal ranges during therapy. Octreotide was stopped and the patient tolerated oral feeding. He was discharged and remains free of symptoms after seven months of follow-up.

Discussion

Somatostatin was first isolated from the hypothalamus and found to inhibit the release of growth hormone. It is also found in pancreatic islets, gastrointestinal tissues, heart, and thyroid and salivary glands⁵.

Somatostatin has been used as a therapeutic agent for management of various pathologic conditions such as acute pancreatitis, neuroendocrine tumors (VIPoma, carcinoid syndrome), AIDS-related diarrhea, inflammatory bowel disease, malabsorption, gastrointestinal hemorrhage, nesidioblastosis and in enterocutaneous fistula¹⁻⁸. Since somatostatin's short circulating half-life requires continuous intravenous infusion, octreotide, a long-acting somatostatin analogue, is preferred.

Conservative management of enterocutaneous fistula is based on bowel rest, parenteral nutrition, control of infection and electrolyte disturbances, and local care of the fistula tract. Some patients with enterocutaneous fistula benefit from these therapies, but some may require additional treatment and/or surgery. Since somatostatin and octreotide inhibit secretion of gastrin, vasoactive intestinal polypeptide (VIP), gastric inhibitory peptide (GIP), secretin and motilin, and also inhibit gastrointestinal motility, gallbladder contraction and the absorption of glucose, amino acids and triglycerides, they are used to reduce the volume and enzymatic activity of the fluid output through the fistula tract. They also beneficially increase transit time and may increase water and electrolyte absorption as well^{9,10}.

Although therapeutic use of octreotide has been reported extensively with various success rates in adults, there is limited experience about its usage in children. Octreotide can be used in nesidioblastosis, secretory diarrhea and familial tall stature in children⁸. There are also case reports on octreotide therapy for resistant pancreatic fistula, biliary fistula and enterocutaneous fistula in children^{5,11,12}.

A prolonged duration of conservative treatment was tried in the present case with no beneficial effect. In view of respiratory distress status and insufficient caloric support by parenteral nutrition, surgical treatment of fistula was not desired. Therefore, octreotide was commenced with close follow-up of hepatic and renal function along with blood glucose monitoring. To the best of our knowledge, this is the first example of octreotide usage in a premature newborn. The fistula output decreased suddenly on the third day of treatment and then stopped, suggesting benefit of the therapy.

In light of the present experience, octreotide may be used safely as an adjunct in the treatment of postoperative enterocutaneous fistula even in small, premature infants under close monitorization of biochemical and blood parameters. It seems octreotide should be considered if a sufficient period of classical conservative treatment does not provide any beneficial effect.

REFERENCES

1. Gonzales-Pinto I, Gonzalez EM. Optimizing the treatment of upper gastrointestinal fistula. *Gut* 2001; 49 (Suppl): 22-31.
2. Rich AJ, Sainsbury JR. Somatostatin in gastrointestinal fistulae. *Lancet* 1986; 1: 1381.
3. Dorta G. Role of octreotide and somatostatin in the treatment of intestinal fistulae. *Digestion* 1999; 60 (Suppl): 53-56.
4. Nubiola-Calonge P, Badia JM, Sancho J, Gil MJ, Segura M, Sitges-Serra A. Blind evaluation of the effect of octreotide (SMS 201-995), a somatostatin analogue, on small-bowel fistula output. *Lancet* 1987; 2: 672-674.
5. Wallace AM, Newman K. Successful closure of intestinal fistulae in an infant using the somatostatin analogue SMS 201-995. *J Pediatr Surg* 1991; 26: 1097-1100.
6. Burroughs AK, Malagelada R. Potential indications for octreotide in gastroenterology: summary of workshop. *Digestion* 1993; 54 (Suppl): 59-67.
7. Farthing MJ. Octreotide in the treatment of refractory diarrhea and intestinal fistulae. *Gut* 1994; 35: 5-10.
8. Tauber MT, Harris AG, Rochiccioli P. Clinical use of the long acting somatostatin analogue octreotide in pediatrics. *Eur J Pediatr* 1994; 153: 304-310.

9. Dueno MI, Bai JC, Santangelo WC, Krejs GJ. Effect of somatostatin analog on water and electrolyte transport and transit time in human small bowel. *Dig Dis Sci* 1987; 32: 1092-1096.
10. Dharmsathaphorn K, Binder HJ, Dobbins JW. Somatostatin inhibits sodium and chloride absorption in the rabbit ileum. *Gastroenterology* 1980; 78: 1559-1565.
11. Storr U, Deckenbach B, Hummer HP, Uberall MA, Zirngibl H, Guggenbichler JP. Acute pancreatitis with formation of a pancreatic pseudocyst in a six-month-old female infant. *Klin PEDIATR* 1993; 205: 370-372.
12. Bakhotmah MA. Successful control of external biliary fistula by using SMS 201-995 in a child. *HPB Surg* 1996; 9: 183-184.