

Administration of vancomycin via a nasocystic tube in the treatment of a pancreatic pseudocyst

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ABSTRACT

Background: Persistent pancreatic pseudocysts require treatment, either by percutaneous drainage or by inserting a device between the cyst wall and an adjacent intestinal organ. One significant complication of a pancreatic prosthesis is its obstruction and subsequent risk of infection.

Objective: To report a case of administration of vancomycin via a nasocystic tube to treat a pancreatic pseudocyst.

Methods: A 69-year-old woman was diagnosed as having a pancreatic pseudocyst. The abdominal computerised tomographic (CT) scan showed a cystic tumour (190 × 153 mm) located in the epigastric area. A cyst-gastrostomy was carried out in which two prostheses were put in place to drain the pseudocyst. Clinical resolution was slow because the pseudocyst became re-infected. The microbiological results showed the presence of *E. faecium* that was sensitive to vancomycin. It was considered appropriate to insert a nasocystic catheter to assist drainage, and give a total daily dose of vancomycin 1 g. This was dissolved in 500 mL of 0.9% saline solution and given every eight hours as an IV perfusion over 20 minutes.

Results: A new CT scan showed that the pancreatic pseudocyst disappeared although there was still poor visibility of the pancreas; there was no sign of any peritoneal liquid or adenopathy. After the fever subsided, the patient was left practically asymptomatic and her recovery was satisfactory.

Conclusion: Although the administration of vancomycin by nasocystic tube has not been previously reported, this case suggests that the method described can be safely used in the treatment of pseudocyst, and can therefore contribute to the patient's positive clinical recovery.

KEYWORDS

Pseudocyst, vancomycin, via nasocystic tube

INTRODUCTION

Vancomycin is an antibiotic with bactericidal activity, which works by interfering with the construction of cell walls in bacteria. Only Gram-positive bacteria are sensitive to the antimicrobial activity of vancomycin. It is a glycopeptide and was isolated in 1956 from the actinomycete, *Streptomyces orientalis* (now known as *Amycolaptosis orientalis*) [1]. Up to the present, the IV route has been used for systemic administration, and other administration routes, such as intrathecal, intraventricular, topical

ophthalmic, subconjunctival and intravitreal have been used for localised treatment, and oral administration for the treatment of pseudomembranous colitis because of negligible absorption at intestinal level. A pancreatic pseudocyst is a collection of tissue, fluid, debris, pancreatic enzymes and blood contained within a capsule of fibrous or granulation tissue from the peritoneum. The most common causes of pancreatic pseudocysts include chronic pancreatitis, acute pancreatitis and pancreatic trauma. Persistent pseudocysts require treatment, either by percutaneous drainage or the insertion of a device between the cyst wall and an adjacent intestinal organ such as the stomach, duodenum or jejunum. Such devices allow the cyst to drain into the organ and can be inserted using conventional open, endoscopic or laparoscopic surgery [2, 3].

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CASE REPORT

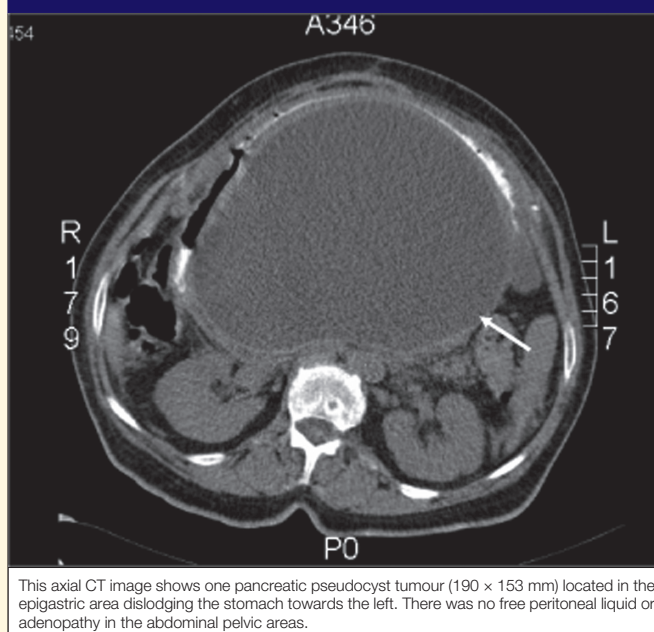
The subject was a 69-year-old female with arterial hypertension and diabetes mellitus undergoing pharmacological treatment. She had no known dyslipidaemias, drug or alcohol addiction, or adverse drug reactions. She had a history of acute hepatitis in infancy. In June 2005,

an exploratory laparotomy was carried out and acute pancreatic bleeding diagnosed. A cholecystectomy and appendectomy were performed to remove some mucinous cysts.

She was admitted to hospital because of the development, over the previous 45 days, of a pruritic irritation that could not be controlled, in spite of treatment with hydroxyzine. The other symptoms were acholia and choluria in the first few days, hyporexia, persistent epigastric pain with a feeling of abdominal fullness, and a loss of 8–9 kg in weight during the past two months. She also mentioned an occasional sensation of dysthermia.

The results from biochemical tests were normal: aspartate aminotransferase: 48.4 IU/L; alanine aminotransferase: 37 IU/L; lactate dehydrogenase: 726 IU/L; creatinine kinase: 726 IU/L. The haematology results were also normal: leukocytes: 4,300/ μ L, comprising neutrophils: 49.3% and lymphocytes: 42%. An abdominal ultrasound revealed a cystic mass in the epigastric area which, because of its large size, obscured the pancreas. The image of the liver was uniform and the spleen and kidneys did not show any anatomical alterations. The abdominal computerised tomographic (CT) scan showed a cystic tumour measuring 190 \times 153 mm located in the epigastric area, dislodging the stomach towards the left and inducing intrahepatic cholestasis (see Figure 1). After a pancreatic pseudocyst was diagnosed, a cyst-gastrostomy was carried out to insert two prostheses, each 8.5 Fr and 7 cm long, to drain the pseudocyst. The pruritus went into remission after adding diphenhydramine to the previously prescribed hydroxyzine. Initial bactericidal treatment was with cefuroxime 750 mg IV every eight hours and metronidazole 500 mg IV every six hours. Twenty days later, during a check-up of the cyst-gastrostomy, one of the prostheses was replaced by another one of 10 Fr and the patency of the other was restored because it had become blocked. After meticillin-resistant *S. aureus* was found in the blood, antibiotic treatment was modified to gentamicin 80 mg IV every eight hours and vancomycin 1 g IV every 12 hours. The patient's recovery was slow because of re-infection of the pseudocyst and a surgical intervention had to be considered. There was a risk of an abscess forming because of the repeated blockages of the drainage tubes. Microbiological investigation of the pseudocyst liquid showed the presence of *E. faecium* sensitive to gentamicin, linezolid, teicoplanin and vancomycin. It was therefore considered appropriate to insert a nasocystic catheter to assist the drainage with rinses. Via this catheter, 1 g vancomycin, dissolved in 500 mL of 0.9% saline solution was administered daily in three divided doses over 20 minutes every eight hours.

Figure 1: CT scan of abdomen and pelvis



After the fever subsided, the patient was left almost asymptomatic and could tolerate digestion so that her recovery, although slow, was satisfactory. The nasocystic tube was removed when it became blocked and in a new CT scan, it could be seen that the pancreatic pseudocyst had disappeared but visibility of the pancreas gland was still poor and there was no sign of any peritoneal liquid or adenopathy. During the 48 days of hospitalisation, no pharmacological treatment was necessary to control the patient's arterial hypertension or diabetes mellitus, which was controlled by diet alone. On discharge from hospital she was advised to restart her medication, if necessary, under medical supervision and she was given an appointment to have the transgastric tubes removed.

DISCUSSION

One of the most significant complications of pancreatic prostheses is that they become blocked, with the subsequent risk of infection and abscess formation. Almost all 5 Fr and 7 Fr prostheses become blocked during the first nine weeks [3], as occurred in our case. After replacing one of the prostheses and restoring the patency of the other, rinses with vancomycin dissolved in saline solution via a nasocystic tube were carried out to prevent infection. The bibliography shows that among the microorganisms present in the contents of pseudocysts are enterobacteria or enterococci, *S. aureus*, *S. epidermis* and anaerobics [4, 5]. In our case, microbiological results showed the presence of *E. faecium* sensitive to gentamicin, linezolid, teicoplanin and vancomycin. Although the administration of

vancomycin via nasocystic tube has not been previously described in the scientific bibliography, it seems to be an effective and convenient way to treat internal communicating collections and pseudocysts of pancreatic origin. By this method, 1 g vancomycin dissolved in 500 mL of 0.9% saline solution and given in three divided doses, one every eight hours, via a nasocystic tube, in addition to the IV standard, allowed the patient to be cured of her pseudocyst, the fever and all symptoms.

CONCLUSION

The presence of microorganisms sensitive to vancomycin in pseudocyst fluid has been reported previously. Nevertheless, the administration of vancomycin by nasocystic tube is a practice that has not been carried out before, to the best of our knowledge. This case suggests that administration of vancomycin by this method can be a safe practice in pseudocyst treatment, and can therefore contribute to the patient's positive clinical recovery.

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