

# Use of *N*-acetylcysteine for postnecrosectomy peripancreatic collections in a patient with severe, acute pancreatitis

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*N*-acetylcysteine (NAC) is useful in the management of various medical conditions such as chronic bronchitis and acetaminophen poisoning, and in tracheostomy care.<sup>1-3</sup> We report its use as a mucolytic agent in the treatment of peripancreatic collections after necrosectomy for acute pancreatitis, and its effect on patient recovery. van Waes and colleagues<sup>4</sup> in 1983 demonstrated the efficacy of NAC in breaking down the viscosity of drain secretions and increasing resolution of intra-abdominal abscesses without systemic side effects. No other reports on this application of NAC have been published since then.

## Case report

A 47-year-old man admitted to our unit in August 2005 had severe acute alcoholic pancreatitis as defined by the Glasgow score (serum albumin < 32 g/L, total serum calcium < 2 mmol/L, serum lactate dehydrogenase > 600 IU/L, serum glucose > 10 mmol/L). He had a 10-year history of heavy alcohol consumption. Three weeks after admission, he had a sterile pancreatic abscess and peripancreatic collections. Initially, we managed this by computed tomography (CT)-guided drainage, but in view of persistent intra-abdominal collections, we did a pancreatic necrosectomy 8 weeks after admission, placing Redivac drains in the lesser sac and left paracolic gutter. Despite this intervention, output from the drains was 50–120 mL/d. Two weeks post-

operatively, intermittent pyrexia and abdominal pain developed with a persistently raised leukocyte count. An abdominal CT scan demonstrated a large collection in the left lumbar region, so we inserted a pigtail catheter into it under CT guidance. This collection would not drain because it was highly viscous. Clinically, the patient continued to have septic episodes, and there was no clinically important drain output for 1 week after placement of the drain.

Therefore, we instilled 6 mL of 10% NAC into the drain in the left paracolic gutter every 3–4 hours. We measured the drain output daily and noted a marked increase (Fig. 1) from 50–120 mL/d from all the drains before the administration of NAC to up to 500 mL/d from the drain in the paracolic gutter 9 days after starting NAC.

An abdominal CT scan with contrast before NAC administration had demonstrated a collection in the left iliac fossa measuring 8.8 × 4.9 cm. A repeat CT scan after 4.5 weeks of treatment demonstrated that the size of the collection was only 5.9 × 3.1 cm (Fig. 2).

The patient continued to improve clinically, and we continued the NAC treatment until his discharge 7 months after admission. A follow-up abdominal CT scan 2 months after discharge confirmed complete resolution of the peripancreatic collection.

## Discussion

*N*-acetylcysteine is an altered form of the amino acid cysteine that is commonly found in food and is synthesized by the body. It contains free sulfhydryl groups

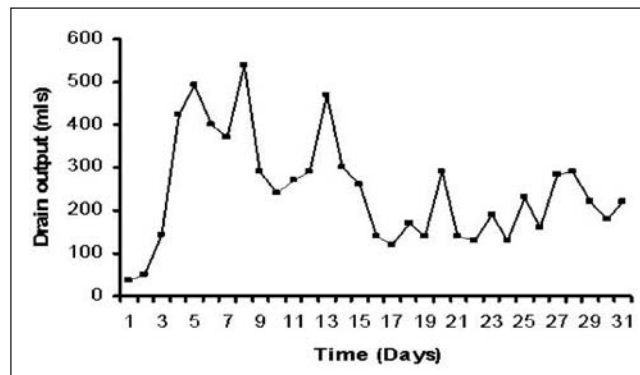


FIG. 1. The total daily output from the drain placed in the peripancreatic collections after daily treatment with *N*-acetylcysteine (NAC).

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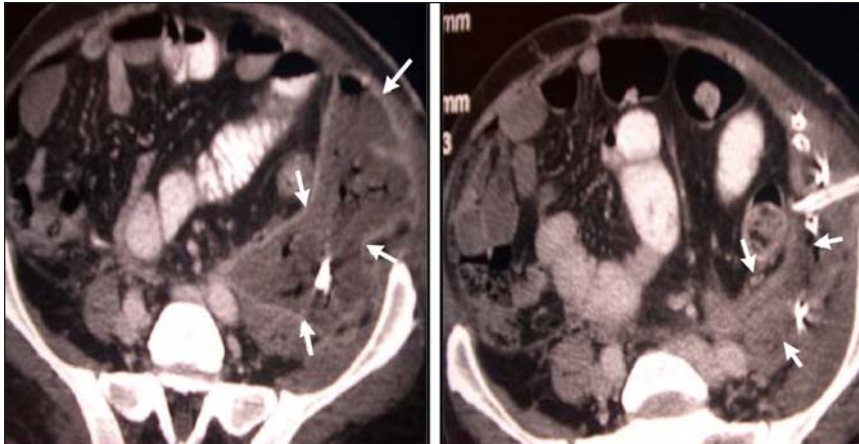


FIG. 2. Collection (arrows) in the left paracolic gutter before the start of *N*-acetylcysteine (NAC) (left) and after 5 weeks of treatment with NAC (right).

(-SH) that have the ability to cleave disulfide bonds (-S-S-) in proteins. This is the chemical basis for the mucolytic and proteolytic effects seen clinically; a bulky, high-viscosity molecule is reduced to a smaller, low-viscosity molecule.<sup>5</sup> *N*-acetylcysteine has no effect on the fibrin component of blood clots or living tissues, and no serious adverse reactions have been reported.

The results in our case were very encouraging. There have been no published reports of the use of NAC as a mucolytic agent in patients with peripancreatic collections after acute pancreatitis since van Waes and colleagues<sup>4</sup> in 1983 described the application of NAC in 2 patients with intra-abdominal abscesses in whom per-

cutaneous drainage was unsuccessful because of the viscous nature of the draining fluid. The first case was a 48-year-old patient admitted with recurrent pancreatitis complicated by peripancreatic collections adjacent to the spleen, left kidney and greater curvature of the stomach; NAC was used successfully to liquify the contents. The second case was a 55-year-old patient who had severe pancreatitis following cholecystectomy. Again, percutaneous drainage was not possible owing to the viscous nature of the pancreatic phlegmon and the collections in the left pararenal space and at the cholecystectomy site. *N*-acetylcysteine was therefore given for 3.5 months with successful resolution of the collection.

## Conclusion

This report outlines the successful application of NAC in the resolution of peripancreatic collections in a patient with severe pancreatitis. Such severe cases of pancreatitis are uncommon in a general hospital setting, so we will use NAC more often in similar cases, when percutaneous drainage has failed, to evaluate the efficacy of this agent.

Competing interests: None declared.

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