CASE REPORT

Abdominal wall necrotising fasciitis due to dislodged percutaneous endoscopic gastrostomy tube

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SUMMARY

Accessing the stomach via a percutaneous endoscopic gastrostomy (PEG) tube is the preferred (and sometimes the only) method for providing enteral nutritional support in disabled patients. However, it is associated with serious and potentially lethal complications which must be completely recognised by physicians, by nurses and especially by radiologists. Abdominal wall necrotising fasciitis of a dislodged or leaking PEG tube could be a lethal complication. We present a case of a 74-year-old bed bound woman who was admitted to our hospital with fever and abdominal pain. On presentation, the patient's temperature was 36°C and laboratory tests showed leucocytosis. Physical examination revealed extensive redness of the abdominal wall, diffuse tenderness of the abdomen and yellowish discharge around the gastrostomy.

BACKGROUND

Percutaneous endoscopic gastrostomy (PEG) tubes are the best way to feed patients with difficulty in swallowing,¹ but this procedure has multiple major complications such as peritonitis, bleeding ulcers and fistula, and the most severe one is necrotising fasciitis, which is rare but could be lethal if not treated in time.

Necrotising fasciitis is a progressive, rapidly spreading, inflammatory infection located in the deep fascia, with secondary necrosis of the subcutaneous tissues.

Necrotising fasciitis is a potentially life-threatening emergency condition² and carries a mortality rate of about 26.6%.

CASE PRESENTATION

In this paper, we present a case of an obese 74-year-old female patient with a body mass index of 35 kg/m² who was bed bound and was admitted to our hospital due to fever for 1 week up to 40°C and abdominal pain. On presentation, the patient's temperature was 36°C, blood pressure 81/51 mm Hg, pulse 81/min and laboratory tests showed leucocytosis, white blood count 26 600/mL when the normal range is between 4800 and 10 800, creatinine 0.85 mg/dL (normal range 0.4–1.3), normal liver enzymes, haemoglobin 11.6 g/dL, platelets 646 × 10³. Physical examination revealed: septic woman, extensive redness of the abdominal wall, diffuse tenderness of the abdomen with yellowish discharge around the gastrostomy and crepitus was felt by touching the abdominal wall. There were no enlarged lymph nodes in the inguinal or axillary region. She was

treated at home with analgesics and antipyretic drugs for 1 week without improvement.

Her medical history revealed: diabetes mellitus for the past 20 years, cerebral vascular accident 10 years ago with the sequel of bed bound and recurrent aspiration pneumonia, chronic carrier of hepatitis C. Consequently, owing to the difficulty in feeding and swallowing, a PEG tube was inserted.

INVESTIGATIONS

The patient was referred to our radiology department for evaluating the position of the PEG tube by fluoroscopy. Routine abdominal X-ray before starting the fluoroscopy showed air in the anterior abdominal wall (subcutaneous emphysema; [figure 1](#)); the PEG tube was considered to be dislodged and removed. The external bolster of the PEG tube was placed away from the skin. Therefore, we did not proceed with this procedure, suspecting abdominal wall necrotising fasciitis. And the patient was transferred from the internal to the surgical department.

Oral contrast CT scan of the abdomen ruled out fistula, abdominal abscess and gastric leakage but showed a huge amount of air in the abdominal wall soft tissues and inflammatory stranding of the subcutaneous fat and soft tissues ([figure 2](#)).

Four days after admission to our hospital, the result of the growth culture of *Proteus*, sensitive to ofloxacin, was obtained from the yellowish discharge which was taken on admission.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis in this case is a gastrocutaneous fistula which was excluded by CT. The treatment in this case is a different surgical procedure.

Figure 1 Abdominal supine X-ray showing subcutis emphysema (free bubbles of air in the abdominal wall (white arrows)).

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Figure 2 Axial non-contrast CT of abdomen (oral contrast only) showing huge amount of air in the abdominal wall (white arrows) and stranding of subcutaneous fat deep to the fascia (black arrows).

It is important not to misinterpret this entity with the diagnosis of simple cellulitis of the abdominal wall for which in this case the treatment is only antibiotics.

TREATMENT

The patient was treated in theatre only once with wide surgical debridement for query 15 cm, treated also with broad-spectrum intravenous antibiotics, and then 4 days later, the antibiotic was switched to ofloxacin after receiving the growth of *Proteus*, which was sensitive to ofloxacin; meanwhile, the patient was fed with total parenteral nutrition and received supportive care.

On discharge from the hospital, she did not need cutis-graft transplants.

OUTCOME AND FOLLOW-UP

The patient had slow improvement and she was discharged from our hospital in good general condition after 30 days of hospitalisation with a nasogastric tube feeding awaiting for reinsertion of a PEG tube in the proximal few months.

The patient did well for 3 months after discharge from our hospital and then died unfortunately due to a severe cerebrovascular accident.

DISCUSSION

In our case, the infection was due to a dislodged PEG tube in the subcutis and not because of the position of the external bolster which was away from the skin.

PEG tube placement has become the most popular method for creating a gastrostomy.¹ It is a quick and cost-effective method that has surpassed open gastrostomy for the establishment of a gastrocutaneous fistula to provide access to the stomach for numerous indications. It is associated, however, with serious complications such as: aspiration, peritonitis, haemorrhage, gastrocolocutaneous fistula. However, the most severe complication is abdominal wall necrotising fasciitis, which accounts about 1% of patients with gastrostomy.² It should be promptly suspected by a clinician, recognised by a radiologist and treated immediately; otherwise, it could be lethal.

Necrotising lesions of soft tissue are infrequently encountered in routine surgical practice.³ Necrotising fasciitis is a rare, rapidly progressive infection that affects the fascia and subcutaneous tissue concomitantly with the development of thrombosis of skin microcirculation, resulting in necrosis of skin and soft tissue, destruction of muscles and liquefaction of fats.⁴

Abdominal wall necrotising fasciitis is usually the result of leakage into the abdominal wall due to the dislodged tube⁵ with overgrowth of bacteria producing gas and severe infection. Risk factors for developing necrotising fasciitis in patients with PEG

tube feeding are: diabetes mellitus, obesity, immunocompromised patients, elderly more than 60 years of age, bedridden, alcohol use and the use of non-steroidal anti-inflammatory drugs.⁶

Mortality in these patients is between 50% and 80%, depending on the comorbid factors in the patient.⁷ Unlike our patient, acute renal insufficiency has a frequency of 31.6% and mortality of 50%, acute respiratory distress syndrome with a frequency of 29% and mortality of 59%, and multiorgan failure with a frequency of 21% and mortality of 77.5%.⁸

Aggressive surgery and debridement are usually required in combination with antibiotic therapy to limit the spread of infection.⁹

The most important clinical signs are tissue necrosis, putrid discharge, bullae, severe pain, gas formations in soft tissue, rapid spreading through fascial planes and the lack of classical tissue inflammatory signs, that is, 'dolor, color, rubor, tumor and functio laesa'.

Owing to the presence of gas-forming organisms, subcutaneous air is the classic sign found in X-rays and CT scans. In a combination of this sign with the clinical presentation and with the physical examination findings, the diagnosis of necrotising fasciitis must be suspected to allow for prompt treatment.

In cases of necrotising infections, a multidisciplinary team approach is mandatory, involving the general practitioner doctors, general and plastic surgeons, radiologists, microbiologists, physiotherapists and nutritionists.¹⁰

The radiologist must be aware of this fatal entity; he must include it in his differential diagnosis such as gastrocutaneous fistula and cellulitis. Even a small amount of air should raise suspicion especially in patients who are receiving PEG feeding.

Abdominal X-rays are not sensitive enough in the initial phases of this entity.

Sonograms and MRI may be helpful in the diagnosis of necrotising fasciitis, although the findings may be non-specific.

CT is considered today the imaging modality of choice and the sensitivity is up to 97% even in the initial phases of the disease.

Prevention of this disease is mandatory and it includes a daily check of the tip of the PEG by aspiration from the stomach before starting feeding trans-PEG tube.

Learning points

- ▶ Abdominal wall necrotising fasciitis is a rare fatal complication in patients with a PEG tube if not treated promptly.
- ▶ Necrotising fasciitis must be suspected in every patient with PEG who is developing redness, bullae, severe pain and the feeling of crepitus when the abdomen is touched.
- ▶ CT is the imaging modality of choice for diagnosing this entity.

Contributors All the authors worked in managing the patient, contributed to the preparation of this paper and approved the final version of the manuscript.

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