

Three cases of emphysematous necrotizing pancreatitis treated by different methods

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Background: Emphysematous pancreatitis is an extremely rare form of acute pancreatitis. Usually it is a life-threatening condition that ordinary requires urgent surgical management. Until now, only a few cases of acute emphysematous pancreatitis have been reported. We present our experience in treating three cases of emphysematous pancreatitis by different methods.

Methods: A retrospective review of case records of three patients with emphysematous pancreatitis who have been treated at our department in 2003 and 2004.

Results: Three patients had pancreatic necrosis with retroperitoneal and intrapancreatic gas trapping for more than 2 years. All these patients on admission had hyperglycemia, manifestation of atherosclerosis (ischaemic stroke, myocardial infarction) and pancreatic necrosis. Passage of gallstones was a trigger of development of pancreatic necrosis and emphysematous pancreatitis. Two of them, with unstable condition, underwent immediate surgery after confirmation of the diagnosis (necrosectomy and open packing) at the third and fourth days of illness. The third patient was operated on (necrosectomy and closed lavage) after initial medical treatment at the fifteenth day from the onset of the disease when failure of organs occurred.

Conclusions: Our limited experience suggests that if the condition of the patient with emphysematous pancreatitis is stable, antibiotic treatment could be undertaken despite the evidence of pancreatic infection. If it is possible, fluid collection drainage could be undertaken by minimal invasive procedures. It allows to provide a much less morbid necrosectomy or, in some cases, may be, to avoid surgery completely.

Key words: Emphysematous pancreatitis, infected pancreatic necrosis, medical treatment

INTRODUCTION

Emphysematous (gas-forming) infections of the gallbladder, stomach, pancreas and genitourinary system are associated with a high morbidity and mortality and are potentially life-threatening. The presence of gas within the parenchyma of solid organs or the walls of hollow viscera may be due to a variety of pathologic or benign entities. Besides, infection with gas-forming bacteria such as *Escherichia coli*, *Clostridium*, *Staphylococcus*, *Streptococcus*, *Klebsiella*, *Candida* and *Pseudomonas*, other possible sources include bland tissue infarction with necrosis, enteric fistula formation, and reflux from the adjacent hollow viscus. Gas should be differentiated from atmospheric air introduced at recent instrumentation or surgery. Gas associated with infection is generally thought to consist of carbon dioxide and nitrogen secondary to the fermentation of glucose by some species of bacteria. Poor glycolysis at the tissue level in diabetic patients results in increased glucose concentrations within the interstitial fluid. Other clinical factors that contribute to the increased

production or slowed removal of gas include a depressed cell-mediated immune response, local tissue necrosis and presence of atherosclerosis (1, 2). For all of these patients with gas-forming infections immediate surgery is generally re-commended (3, 4, 5).

Until now, only a few cases of acute emphysematous pancreatitis have been reported and the experience of its treatment is limited. So we would like to present our experience in treating emphysematous pancreatitis.

PATIENTS AND METHODS

Eighty-nine patients (mean age 70.7 ± 3.8 years) with severe acute pancreatitis were treated at our department in 2003 and 2004, including three patients who developed emphysematous pancreatitis. Data on these patients are presented in Table. Two of them had previously suffered from ischemic stroke, and one had myocardial infarction. All the patients were diagnosed with acute pancreatitis caused by calculous cholecystitis and choledocholithiasis. CT scan showed pancreatic necrosis, retroperitoneal and intrapancreatic gas trapping for all of them in the first week of the disease (Figs. 1–3). Two male patients, for whom vaso-

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Table. Patient data

Parameter	Case 1	Case 2	Case 3
Age, years	72	66	74
Sex	Female	Male	Male
Appache II score	18	23	16
CT evidence of necrosis	>50%	>50%	<30%
CT evidence of intrapancreatic air	yes	yes	yes
CT evidence of retropancreatic air	yes	yes	yes
Glucose during admission mmol/l	12,5	10,2	7,0
Comorbid illness	Ischaemic stroke	Ischaemic stroke	Miocardial infarction
Time of operation, days from the onset of the disease	15	4	3
Type of operation	Closed lavage	Open packing	Open packing
Hospital stay after operation, days	96	56	75
Cultures of necrotic pancreas tissue	<i>Escherichia coli</i>	<i>Escherichia coli</i> <i>Providentia rettgeri</i>	<i>Escherichia coli</i> <i>Bacteroides fragilis</i>

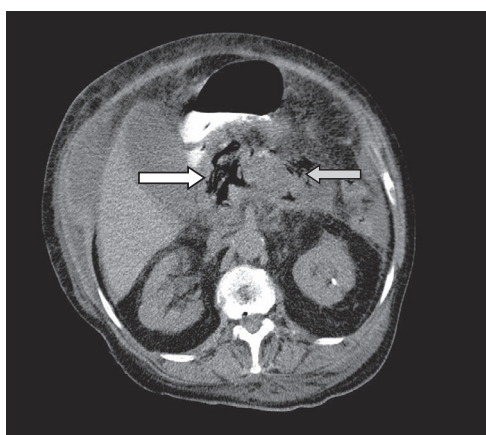


Fig. 1. Case 1: CT scan showing more than 50% necrosis with intrapancreatic (white arrow) and retropancreatic (grey arrow) gas

pressor-noradrenaline doses were increased to 0.4 µg/kg/min to provide sustainable hemodynamics due to bacteremic shock, were successfully treated by extensive pancreatic necrosectomy, open packing with multiple debridement immediately after CT diagnosis of emphysematous pancreatitis. One female patient was treated with antibiotics (ciprofloxacin and metronidazole), oxygen therapy, fluid and electrolyte correction and nasojejunal feeding for 9 days, followed by necrosectomy due to organ failure with continued lavage.

Escherichia coli infection was present in all three patients who underwent surgery. Additionally, *Bacteroides fragilis* and *Providentia rettgeri* were cultured for the 1st and 2nd patient, respectively.

All these patients recovered and were discharged from our department.

DISCUSSION

Emphysematous pancreatitis is an extremely rare form of acute pancreatitis. Usually it is a life-threatening condition that ordinarily requires surgical management. In our case, all the three patients on admission had hyperglycemia, manifestation of atherosclerosis (ischemic stroke, myocardial infarction), and CT scan showed pancreatic necrosis with retroperitoneal and intra-

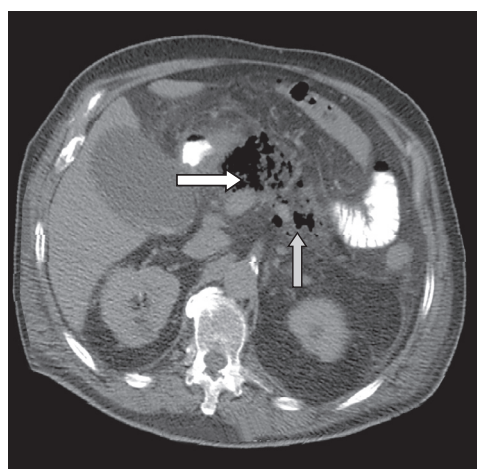


Fig. 2. Case 2: CT scan showing more than 50% necrosis with intrapancreatic (white arrow) and retropancreatic (grey arrow) gas

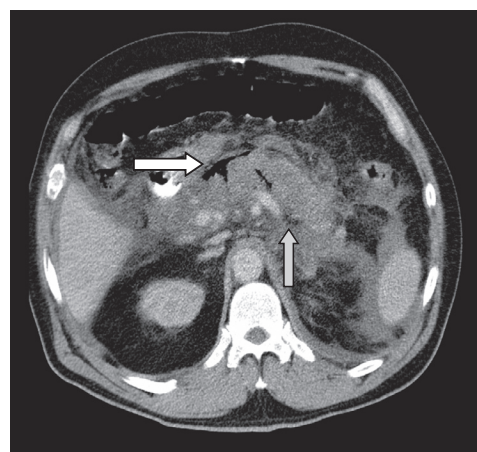


Fig. 3. Case 3: CT scan showing less than 30% necrosis with intrapancreatic (white arrow) and retropancreatic (grey arrow) gas

pancreatic gas trapping. All of these factors, combined with advanced age, passage of gallstones, could trigger the development of pancreatic necrosis and emphysematous pancreatitis.

Despite the similar age, comorbid illness and the amount of necrosis, two patients in a life-threatening condition underwent

immediate surgery after CT scan diagnosis confirmation as generally recommended (3–5) and one female patient was initially treated conservatively for 9 days until organ failure occurred.

We suppose that in case the condition of a patient with emphysematous pancreatitis is stable immediate surgery isn't necessary. The antibiotic treatment could be considered as a treatment option despite the evidence of pancreatic infection. In some cases, if possible, fluid collection drainage by minimal invasive procedures could be added to antibiotic treatment (6). It allows to provide more time for the organism's inherent defense mechanisms to wall off the necrotic areas. This results in much smaller morbid necrosectomy and, in some cases, allows, to avoid surgery completely. Other authors have reported some cases of successful antibiotic treatment of infected pancreatic necrosis without any surgical intervention (7, 8). In those cases, however, infected pancreatic necrosis was identified later on, not at the onset of the disease, and the patients were much younger.

Because the number of cases of emphysematous pancreatitis treatment is too small, is it difficult to draw valid conclusions.

CONCLUSIONS

Our limited experience suggests that if the condition of the patient with emphysematous pancreatitis is stable, antibiotic treatment could be undertaken despite the evidence of pancreatic infection. **If possible, fluid collection drainage could be undertaken by minimal invasive procedures.** This allows to provide more time for the organism's inherent defense mechanisms to wall off the necrotic areas and thus to reduce morbid necrosectomy or, in some cases, to avoid surgery completely.

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TRYS SKIRTINGA GYDYMO TAKTIKA GYDYTO EMFIZEMINIO NEKROZINIO PANKREATITO ATVEJAI

Santrauka

Emfizeminis pankreatitas labai reta, gyvybei pavojinga ūminio pankreatito forma, reikalaujanti skubios chirurginės intervencijos. Iki šiol aprašyti tik keli emfizeminio pankreatito atvejai, todėl jo gydymo taktika dar nėra nusistovėjusi. Šiame straipsnyje norime pasidalinti savo patirtimi gydant emfizeminį pankreatitą ir pristatyti tris *Escherichia coli* sukeltus atvejus.

Metodai: Trijų mūsų klinikoje 2003–2004 m. gydytų emfizeminio pankreatito atvejų retrospektyvinė analizė.

Rezultatai. Per dvejus metus buvo gydyti 3 ligoniai, kuriems buvo nustatyta kasos galvutės nekrozė su intrapankreatiniais bei retroperitoniniais dujų intarpais. Šiems ligoniams hospitalizacijos metu buvo konstatuota hiperglikemija, toli pažengusi aterosklerozė (persirgta insultas, infarktas) bei kasos nekrozė su dujų intarpais. Emfizeminio pankreatito priežastis – tulžies latakų akmenligė. Du ligoniai dėl organų funkcijos nepakankamumo operuoti iš karto – trečią ir ketvirtą parą nuo susirgimo pradžios. Jiems atlikta nekrozektomija ir taukinės maišelio tamponavimas. Trečias ligonis operuotas vėliau, penkioliktą susirgimo parą, kai tik pradėjo vystytis organų funkcijos nepakankamumas. Jam atlikta nekrozektomija ir taukinės maišelio drenavimas. Visi ligoniai išgyveno ir buvo išrašyti iš mūsų klinikos.

Išvados. Jei ligonio būklė stabili, siūlome kasos nekrozės infekciją pradėti gydyti antibiotikais ir leisti atsiriboti nekrozei nuo aplinkinių audinių. Taip išvengtume ankstyvos trauminės chirurginės intervencijos.

Nepaisant nei radiologinių, nei bakteriologinių duomenų, bendra ligonio būklė yra pagrindinis kriterijus, lemiantis gydymo taktikos pasirinkimą.

Raktažodžiai: emfizeminis pankreatitas, infekuota kasos nekrozė, konservatyvus gydymas