

Severe Acute Necrotizing Pancreatitis – Case Report

Kolani Henri^{1*} Xhelili Eljona² Vila Frenki³ Haxhiu Asfloral⁴ Masati Bledi⁵ Braholli Eriol⁶
Çili Manser⁷ Osmënaj Renato⁸ Kananaj Ervin⁹ Prendi Urana¹⁰ Qosja Entela¹¹
Taçi Stela¹² Thomanasto Aleksandër¹³ Prendi Kristian¹⁴ Sula Arentin¹⁵

1. Associate Professor, General Surgeon, “Mother Teresa” University Hospital, Tirana, Albania

2. General Surgeon, Kukës Regional Hospital, Kukës, Albania

3. General Surgeon, Memorial Hospital, Fier, Albania

4. General Surgeon, Lushnje County Hospital, Lushnje, Albania

5. General Surgeon, University Trauma Hospital, Tirana, Albania

* E-mail of the corresponding author: henri.kolani@yahoo.com

Abstract

Background

Acute necrotizing pancreatitis is a severe form of pancreatitis. It is confirmed with an MRI (MRCP) or IV contrast CT, which shows that more than 30% of the pancreas is not enhanced. A prompt diagnosis of necrotizing pancreatitis is important because it has implications in morbidity and mortality. Treatment of the necrotizing type is different compared to the interstitial pancreatitis. More often than not, patients with necrotizing pancreatitis appear unwell, in shock or in multiple organ failure. The decision when and what type of surgery is needed for necrosis debridement, should be made by the pancreatic surgeon, after discussions with gastro-enterologists.

Case presentation

The patient was surgically treated for acute cholecysto-pancreatitis with empyema and peritonitis. For 10 days he was treated at the hospital, but was not improving. He presented signs of septic shock, hypotension, fever, leucocytosis and purulent discharge from abdominal drains. After initial resuscitative measures, it is concluded the patient need and urgent laparotomy for necrosis debridement. One month after the necrectomy and multiple drainage procedure the case is complicated by bile leak after the removal of a T-tube. Failure of ERCP prompted a reintervention for the surgical placement of a common bile duct stent. The patient recovered well and was discharged from the hospital.

Discussion

Patients diagnosed with acute pancreatitis should be looked up finding the possible cause. 50-60% of the incidence is due to gallstones or related problems. Approximately 20% of the cases are caused by alcohol intake and the rest have an idiopathic etiology. The first step in managing acute pancreatitis is fluid and electrolyte rehydration, maintaining adequate systemic circulation. Antibiotic treatment is a controversial topic regarding the timing. Antibiotic use has shown benefit when administered early in patients with necrotic pancreatitis. There is an ongoing debate if the patient should be kept nil per or should continue enteral nutrition as tolerated. However nutritional support is an important component, as catabolic states are associated with higher mortality.

Conclusion

It is generally recommended that sterile necrotic pancreatitis is treated conservatively with early antibiotics. Meanwhile, patient with infected necrosis should be treated surgically, via endoscopy, laparoscopy, percutaneous drainage or open surgery.

Keywords: General Surgery, Acute Pancreatitis, Necrotizing Pancreatitis, Debridement.

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1. Introduction

Acute necrotizing pancreatitis is a severe form of pancreatitis. It is confirmed with an MRI (MRCP) or IV contrast CT, which shows that more than 30% of the pancreas is not enhanced. A prompt diagnosis of necrotizing pancreatitis is important because it has implications in morbidity and mortality. Treatment of the necrotizing type is different compared to the interstitial pancreatitis. More often than not, patients with necrotizing pancreatitis appear unwell, in shock or in multiple organ failure.

Approximately, in the first two weeks, a pancreatic necrosis is generally considered sterile, thus is treated conservatively. Patients with comorbidities may need ICU admission and supportive care, with enteral feeding and avoiding of IV lines or other sources of infection. At this moment, antibiotic therapy is controversial.

Surgical necrectomy of a sterile pancreatic necrosis is not advisable, and technically difficult. It should be avoided in the first 8 days due to the hard consistency of the necrosis.

Generally pancreatic necrosis is infected after the 10th day of hospital admission. First signs of an infected necrosis are fever, pain, leucocytosis and signs of sepsis. It is believed the source of infection comes from the flora of the colon. For this reason, most clinicians do not stop enteral feeding, in order to reduce pathogenic flora.

In stable patients with infected necrosis, a conservative approach with careful supportive measures is recommended. Antibiotics that enter pancreas such as fluoroquinolones, metronidazole and imipenem should be administered. However, it is unlikely this will cure the patient, but it will allow for the formation of an encapsulated necrosis after approximately four to five weeks from the onset of symptoms. It will make possible for a minimally invasive drainage via laparoscopy, endoscopy or percutaneously. The decision when and what type of surgery is needed for necrosis debridement, should be made by the pancreatic surgeon, after discussions with gastro-enterologists.

2. Case presentation

2.1 History of present illness

Our patient is a 53 years old male with the following medical history and presentation:

The patient was surgically treated for acute cholecysto-pancreatitis with empyema and peritonitis. For 10 days he was treated at the hospital, but was not improving. He presented signs of septic shock, hypotension, fever, leucocytosis and purulent discharge from abdominal drains. After initial resuscitative measures, it is concluded the patient need and urgent laparotomy for necrosis debridement.



Figure 1. Necrotic-purulent discharge form abdominal drains.

2.2 Details of the surgical procedure

The procedure begins with a general endotracheal anaesthesia. A superior and inferior median laparotomy is made.

Upon entering the peritoneal cavity, we encounter generalized peritonitis with supramesocolic adhesions, pus, dendritic and necrotic tissue remnants. After carefully liberating the supramesocolic space and entering the omental bursa we evidence the presence of necrotic-haemorrhagic pancreatitis, with a destructive inflammatory process encompassing the whole pancreas, more prominently in the body and tail, with marked edema of the head.

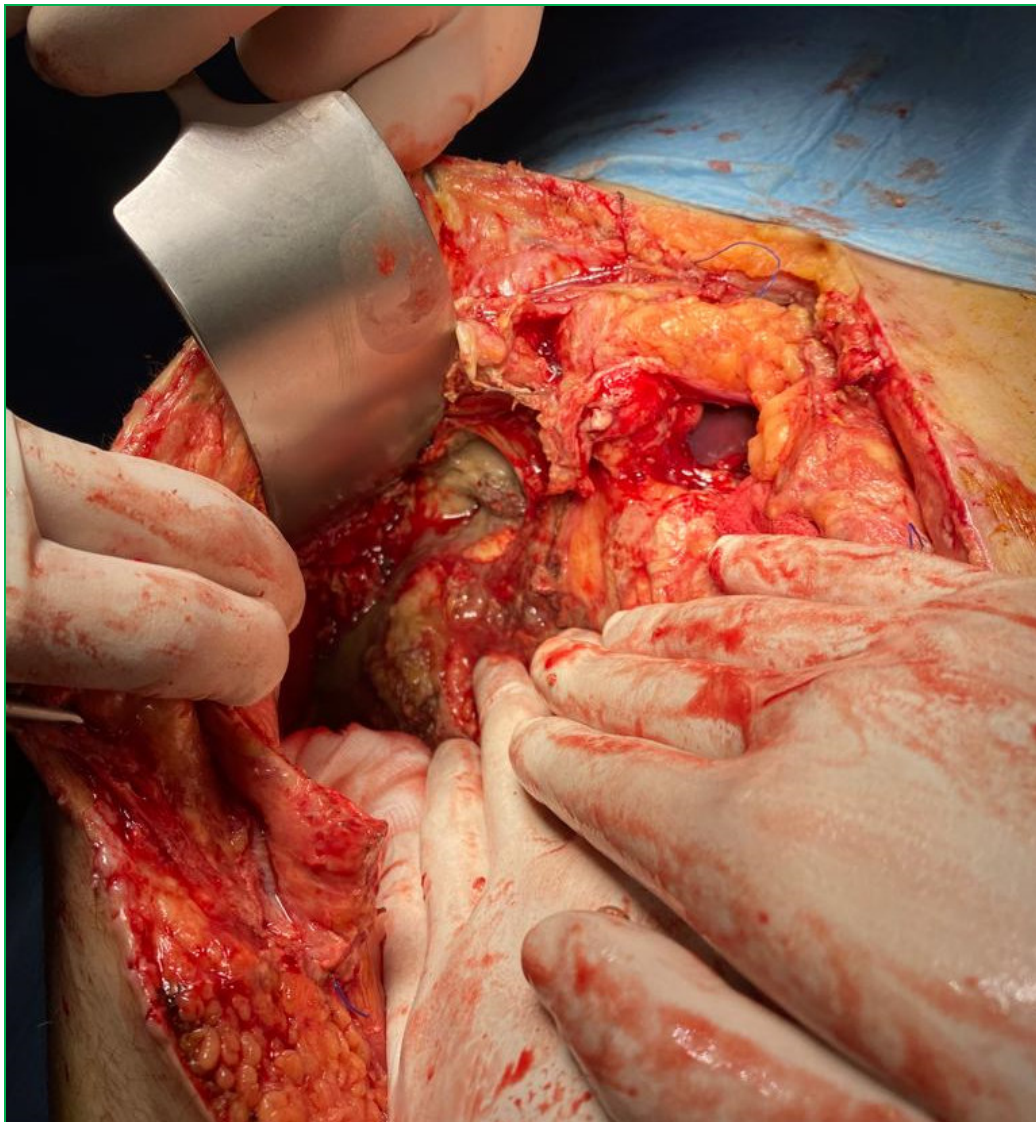


Figure 2. Generalized peritonitis, with necrotic tissue and pouches of pus collection.

We perform a careful necrectomy of the dead tissue of pancreas and thorough lavage of the peritoneal cavity.

Multiple drains were inserted in the omental bursa, subhepatic level, Douglas pouch and left subphrenic space.

Moreover, a T-tube (Kehr drain) was placed in the common bile duct to divert the bile flow and allow for the head of the pancreas edema to reduce. A feeding jejunostomy was also placed. The procedure ends with mass closure of the abdominal wall and skin.

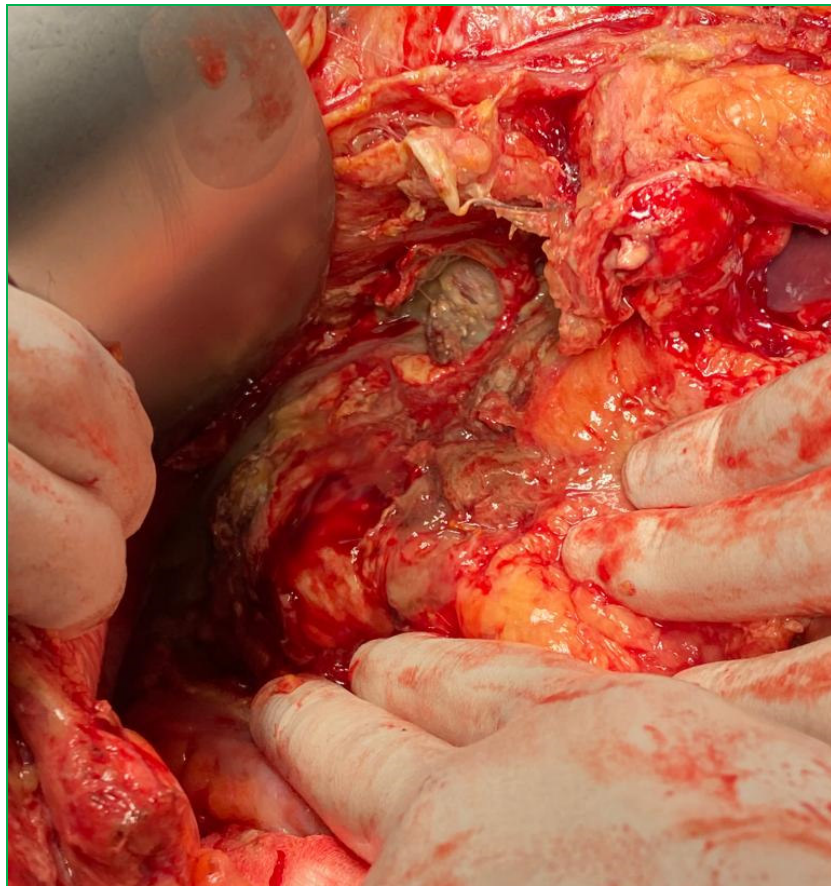


Figure 3. Collections of pus and necrotic tissue at the subhepatic level.



Figure 4. Necrotic pancreas tissue.



Figure 5. End of the procedure. Multiple drainage. T-tube and jejunostomy (red).

2.3 Post-operative period 1

The patient was closely monitored in the intensive care unit for the first 5 days. He was provided with adequate supportive measures. The patient experienced no more fever, and signs of septic shock waned. Bile was accumulated from the T-tube and inserted in the jejunostomy tube in 2h intervals.

He was recovering well and was discharged in day 15, in an improved state, after the drains were removed and the bile flow from the Kehr drain had diminished. The patient often complains of nausea and vomiting.

He was recalled two weeks later for the removal of the T-tube after a cholangiogram.

The following days the patient notices an increasing flow of bile leakage from the abdominal site of T-tube passage. His condition was not improving so we requested an ERCP procedure which resulted unsuccessful.

A decision was made for a second laparotomy.

2.4 Details of the second procedure

A median laparotomy was made. Upon entering the peritoneal cavity, we start relieving the adhesions of the supramesocolic space. Carefully dissecting the common bile duct, we encounter a small defect from where the bile would have leaked. A stent is passed intraoperatively in the common bile duct, ensuring the bile passage in duodenum. Furthermore, a gastro-entero anastomosis was performed, to relieve the patient of the nausea and bloating symptoms and prevent gastric stasis.

2.5 Post-operative period 2

The patient tolerated the procedure well, with uneventful post-operative course. He was discharged in good health in the 4th day after surgery. Further follow-ups show a progressive improvement of general health, appetite and weight gain.

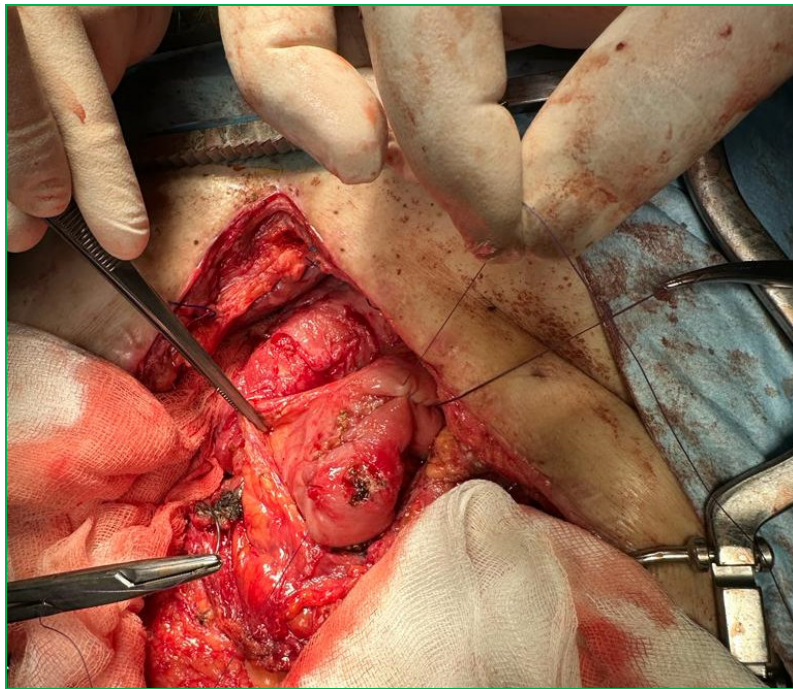


Figure 6. Insertion of the common bile duct stent.

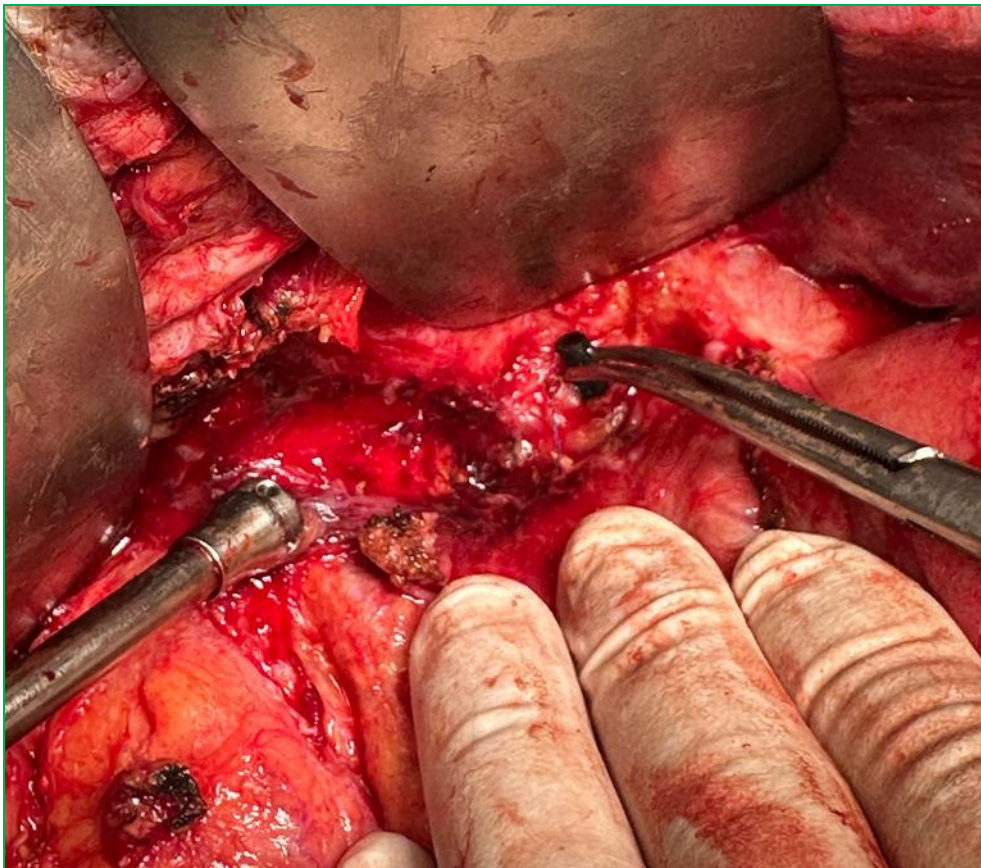


Figure 7. Gastro-entero anastomosis stage.

3. Discussion

Medical staff should evaluate the patient to determine the disease severity and signs of organ failure. Patients diagnosed with acute pancreatitis should be looked up finding the possible cause. 50-60% of the incidence is due to gallstones or related problems. Approximately 20% of the cases are caused by alcohol intake and the rest have

an idiopathic etiology.

The first step in managing acute pancreatitis is fluid and electrolyte rehydration, maintaining adequate systemic circulation. Antibiotic treatment is a controversial topic regarding the timing. Antibiotic use has shown benefit when administered early in patients with necrotic pancreatitis.

There is an ongoing debate if the patient should be kept nil per or should continue enteral nutrition as tolerated. However nutritional support is an important component, as catabolic states are associated with higher mortality. Some authors prefer keeping patients NPO for the rationale that it may exacerbate inflammation of the pancreas by enzyme secretion. Another benefit of providing enteral nutrition is the reduction of pathogenic flora of colon, which in advanced stages may cause infection of the necrosis.

4. Conclusion

Acute pancreatitis with necrosis presents a severe form of the disease. It develops in two phases. The first two weeks are featured by the inflammatory mediators causing a systemic response, progressing in hypovolemia, edema and fluid loss with increased capillary permeability.

The second phase of acute pancreatitis is characterized by sepsis and the infection of pancreatic necrosis. It further complicates into multiple organ failure.

Antibiotic agents that penetrate pancreatic tissue are recommended. A sterile necrosis can however get infected in 40-70% of cases and is an important mortality risk factor.

It is generally recommended that sterile necrotic pancreatitis is treated conservatively with early antibiotics. Meanwhile, patient with infected necrosis should be treated surgically, via endoscopy, laparoscopy, percutaneous drainage or open surgery.

Conflict of interest

The author(s) declare(s) that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper.

Financial disclosure

There is no financial support to this study.

Ethical aspect

Informed consent was obtained from all participants in the study and all procedures were conducted in accordance with the Declaration of Helsinki.

References

1. Scott Tenner, William M. Steinberg, Chapter 58 - Acute Pancreatitis, Editor(s): Mark Feldman, Lawrence S. Friedman, Lawrence J. Brandt, Sleisenger and Fordtran's Gastrointestinal and Liver Disease (Ninth Edition), W.B. Saunders, 2010, Pages 959-983.e6, ISBN 9781416061892, <https://doi.org/10.1016/B978-1-4160-6189-2.00058-5>.
2. Büchler MW, Gloor B, Müller CA, Friess H, Seiler CA, Uhl W. Acute necrotizing pancreatitis: treatment strategy according to the status of infection. *Ann Surg.* 2000 Nov;232(5):619-26. doi: 10.1097/0000658-200011000-00001. PMID: 11066131; PMCID: PMC1421214.
3. Warshaw AL. Pancreatic necrosis: to debride or not to debride-that is the question. *Ann Surg.* 2000 Nov;232(5):627-9. doi: 10.1097/0000658-200011000-00002. PMID: 11066132; PMCID: PMC1421215.
4. Amano H, Takada T, Isaji S, Takeyama Y, Hirata K, Yoshida M, Mayumi T, Yamanouchi E, Gabata T, Kadoya M, Hattori T, Hirota M, Kimura Y, Takeda K, Wada K, Sekimoto M, Kiriyama S, Yokoe M, Hirota M, Arata S. Therapeutic intervention and surgery of acute pancreatitis. *J Hepatobiliary Pancreat Sci.* 2010 Jan;17(1):53-9. doi: 10.1007/s00534-009-0211-6. Epub 2009 Dec 12. PMID: 20012651.
5. Xu XD, Wang ZY, Zhang LY, Ni R, Wei FX, Han W, Zhang HH, Zhang YW, Wei ZG, Guo XH, Guo LQ, Ma JZ, Zhang YC. Acute Pancreatitis Classifications: Basis and Key Goals. *Medicine (Baltimore).* 2015 Dec;94(48):e2182. doi: 10.1097/MD.0000000000002182. PMID: 26632905; PMCID: PMC4674208.
6. Yadav D, Lowenfels AB. The epidemiology of pancreatitis and pancreatic cancer. *Gastroenterology.* 2013 Jun;144(6):1252-61. doi: 10.1053/j.gastro.2013.01.068. PMID: 23622135; PMCID: PMC3662544.
7. Greenberg JA, Hsu J, Bawazeer M, Marshall J, Friedrich JO, Nathens A, Coburn N, May GR, Pearsall E, McLeod RS. Clinical practice guideline: management of acute pancreatitis. *Can J Surg.* 2016 Apr;59(2):128-40. doi: 10.1503/cjs.015015. PMID: 27007094; PMCID: PMC4814287.
8. De Lucia SS, Candelli M, Polito G, Maresca R, Mezza T, Schepis T, Pellegrino A, Zileri Dal Verme L, Nicoletti A, Franceschi F, Gasbarrini A, Nista EC. Nutrition in Acute Pancreatitis: From the Old Paradigm to the New Evidence. *Nutrients.* 2023 Apr 18;15(8):1939. doi: 10.3390/nu15081939. PMID: 37111158; PMCID: PMC10144915.

9. Bugiantella W, Rondelli F, Boni M, Stella P, Polistena A, Sanguinetti A, Avenia N. Necrotizing pancreatitis: A review of the interventions. *Int J Surg.* 2016 Apr;28 Suppl 1:S163-71. doi: 10.1016/j.ijssu.2015.12.038. Epub 2015 Dec 18. PMID: 26708848.
10. Kokosis G, Perez A, Pappas TN. Surgical management of necrotizing pancreatitis: an overview. *World J Gastroenterol.* 2014 Nov 21;20(43):16106-12. doi: 10.3748/wjg.v20.i43.16106. PMID: 25473162; PMCID: PMC4239496.
11. Dost W, Qasemi F, Ali W, Aini T, Rasully MQ, Niazi J, Sarhadi Jamal R, Sayer M, Qadar LT, Afzali SMS. Immediate Catheter Drainage Versus Delayed Drainage in the Management of Infected Necrotizing Pancreatitis. *Cureus.* 2022 Jul 1;14(7):e26485. doi: 10.7759/cureus.26485. PMID: 35919210; PMCID: PMC9339159.
12. van Grinsven J, van Dijk SM, Dijkgraaf MG, Boermeester MA, et al; Dutch Pancreatitis Study Group. Postponed or immediate drainage of infected necrotizing pancreatitis (POINTER trial): study protocol for a randomized controlled trial. *Trials.* 2019 Apr 25;20(1):239. doi: 10.1186/s13063-019-3315-6. PMID: 31023380; PMCID: PMC6482524.