

Case Report

Complicated Pancreatitis: A Rare Complication Following Scoliosis Correction Surgery

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Citation: Dolaszynska B (2018) Complicated Pancreatitis: A Rare Complication Following Scoliosis Correction Surgery. Annal Cas Rep Rev: ACRR-108.

Received Date: 19 October, 2018; **Accepted Date:** 23 October, 2018; **Published Date:** 30 October, 2018

Abstract

Acute and chronic pancreatitis post scoliosis correction surgeries have been reported before as a rare complication. Many hypothesis were suggested including direct trauma and waves generated by the high speed drilling and re-alignment of the spine after the surgery. In all the cases reported before there was an element suggesting those hypothesis. In this case, there was no evidence that the pancreatitis is caused by the spinal surgery at all. 14-year-old girl who was admitted for elective scoliosis surgery on. She was unwell post operatively, with a rising CRP and an increasingly distended abdomen. A CT abdomen was performed and showed some free fluid but no free gas. She went for a diagnostic laparoscopy due to failure of conservative management. This showed extensive inflammation of the right side of the colon, adherent to the bowel and that led to laparotomy and extended right hemicolectomy and ileostomy formation. The surgical samples from the bowels has been sent for pathology in which showed manifestations of Pancreatitis. No cause identified for diagnosis. The histology Macroscopy report of the biopsy samples in this patient showed congested and oedematous serosa with adhesions and patchy, fibrinopurulent exudate extending along almost the entire length of the specimen (Right Hemicolectomy). Microscopically: There is extensive mesenteric panniculitis with multifocal neutrophilic abscesses surrounding fat necrosis. There was extensive saponification and necrosis. There are acute and chronic inflammatory cells within the fat necrosis -foamy histiocytes, lymphocytes, neutrophils and plasma cells.

Conclusion

Mesenteric panniculitis with multifocal coalescent fat necrosis. Imaging reviewed and revealed that the pancreas and transverse colon is a long way away from the spine or trajectory of the screws Spinal fusion for severe neuromuscular scoliosis is a difficult procedure, with a high rate of complications. Among them, pancreatitis should be considered when abdominal pain persists in the postoperative period. Early diagnosis and management would always improve the outcome in such cases. Despite rarity of these cases, mentioning such complications in the consent would be important at some stage especially with increased number of cases reported.

Background

Inflammation of the pancreas is known to be a serious condition and potentially life-threatening which may occur as a complication after certain operations. There is high significance of the type of the operation leading to pancreatitis.

The incidence of pancreatitis complication post operation generally - including all types of operations - across the European country and US is ranged from 4.6 to 100 per 100 000 populations and 4.9 to 35 per 100,000 populations respectively. The exact figures showing the pancreatitis specifically after spinal surgeries in general and scoliosis

correction are still not clear and no randomised control study has been carried out to date.

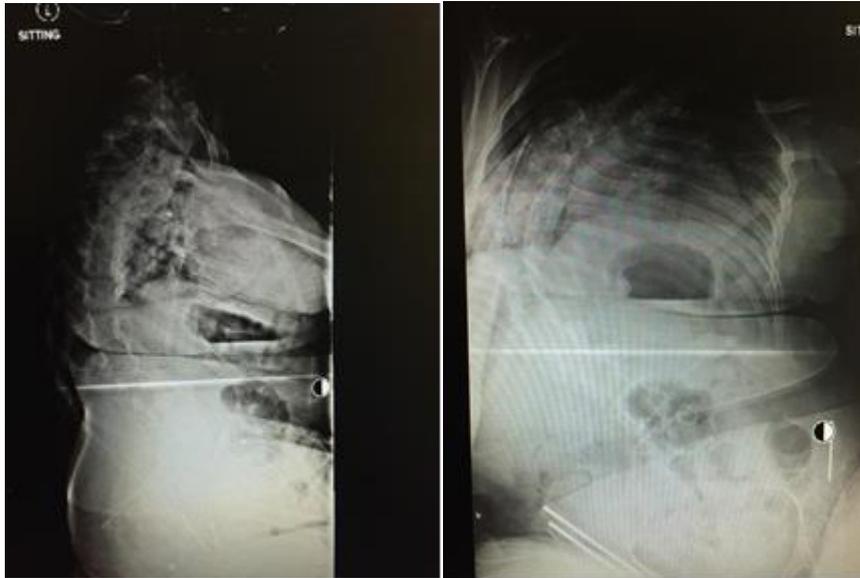
Pancreatitis after spine surgery has not been reported that often. In literature very few scattered cases reported with complicated pancreatitis post op of scoliosis correction that needed surgical intervention to deal with it. Many hypothesis were suggested that complication happens after direct trauma and waves generated by the high speed drilling and re-alignment of the spine during operation. Also the importance of hemodynamic instability, prone position during surgery were taken into account for finding the cause. However, there is no prove for any of them. In previous cases found in the literature there was usually an element suggesting such hypothesis. In our case, there was no evidence that pancreatitis is caused by the spinal surgery at all.

Although, reported as a rare complication, pancreatitis is such gross complication which may lead to devastating changes in the body or even death. It is of great importance for spinal surgeons and everyone who is taking care of patient post op to be aware of the possibility of pancreatitis which diagnosed with delay often may be life-threatening. In this case we present how pancreatitis happen to the 14 years old girl who underwent elective scoliosis correction surgery.

Case Presentation

A 14-year-old girl admitted to the hospital for elective surgery of idiopathic scoliosis correction. Patient has got multiple

comorbidities. She suffers from cerebral palsy, epilepsy, COPD, scoliosis, underwent bilateral hip reconstruction. PEG tube feeding since age of 2.



Pre-operatively patient was examined by a surgeon and anaesthetist and optimised for surgery.

Patient underwent scheduled surgery of T2 to the pelvis posterior correction of scoliosis. After uneventful procedure child remained in hospital for recovery.

On the third day after surgery patient started to experience symptoms of abdominal distention. Blood test showed low potassium and was treated as an ileus with slow feeds and intravenous fluid and decompressive nasogastric tube.

Unfortunately, those methods were not of great benefit to the patient as she developed temperature of 38 C in the seventh post op day, there was no output from her NG tube and yellow fluid was draining from gastrostomy. Biochemistry and haematology performed and demonstrated CRP of 243, WBC 23.9 with neutrophilia.

At this point abdominal CT scan was requested and showed intra-abdominal features suggestive of upper abdominal collection with intra-abdominal and pelvic free fluid.

An emergency diagnostic laparoscopy was performed next day when patient developed guarding and tenderness. Findings of inflamed right colon with adhesions and underlying abscess extending above duodenum. Small intestine, left colon and sigmoid did not show any signs of inflammation or changes. It was clear that patient needs right hemicolectomy which finished with ilectomy. Specimens were sent for pathological examination and revealed the following:

Macroscopic Report

Right hemicolectomy: A right hemicolectomy specimen comprising 18mm length of terminal ileum and 325mm length of large intestine comprising caecum, ascending and proximal transverse colon. Maximum bowel circumference is

105mm and mesentery reaches a depth of 45mm. Attached appendix is 35mm in length x up to 8mm in diameter. The serosa is congested and oedematous with adhesions and there is patchy, fibrinopurulent exudate extending along almost the entire length of the specimen, which is more abundant at the proximal end where the mesentery is matted with exudate. The appendix bears fibrinopurulent exudate at the tip and is congested, but is otherwise unremarkable. The terminal ileum mucosa is granular and bile stained. The large intestine mucosa, particularly proximally is oedematous. Distally, the mucosa shows loss of mucosal folds and there is some thinning of the bowel wall, but no perforation is identified macroscopically. On slicing, the mesentery towards the proximal end of the specimen is filled with necrotic areas which are caseous in appearance. Present separately in the container are fragments of omentum in aggregate 120 x 65 x 10mm.

The specimen has been photographed using the Macropath imaging system

- Blocks: 1A: tip and transverse section of appendix
- 1B and 1C: composite block single longitudinal strip from proximal resection margin through ileocaecal valve into caecum
- 1D and 1E: samples of oedematous ascending colon
- 1F and 1G: samples of thinned bowel wall hepatic flexure/proximal transverse colon
- 1H: longitudinal sample to distal resection margin
- 1I: proximal nodes
- 1J: distal nodes

Microscopic Report

Sections from the colonic segment show large bowel type mucosa with mild mucosal ischaemia. The submucosa is

expanded. The muscularis propria is splayed focally and is inflamed. There is normal ganglionic innervation.

There is extensive mesenteric panniculitis (inflammation of fat) with multifocal neutrophilic abscesses surrounding fat necrosis, throughout the specimen. Some of these abscesses are seen to coalesce to form large geographic ulcers limited to the paracolic fat. There is extensive saponification and necrosis within these areas. There are acute and chronic inflammatory cells within the fat necrosis - foamy histiocytes, lymphocytes, neutrophils and plasma cells. The peritoneum is inflamed focally and shows acute on chronic inflammatory cells. The appearances are those of extensive mesenteric panniculitis with multifocal coalescent fat necrosis.

The appendix is normal, although the peri-appendiceal fat shows focal necrosis and acute inflammation. There is no evidence of appendicitis or parasitic infestation. The margins are relatively normal.

There is no evidence of vasculitis, acid fast bacilli, fungi or malignancy

After the surgery patient recovered well and started on TPN of 70% of her daily needs and PEG tube gradually been used and nutrition titrated up. The patient was on antibiotics as the blood cultures showed septicaemia with pseudomonas aeruginosa. The patient stayed in Paediatrics ICU unit for the

next five days. On her sixth post op day, the patient was stepped down to the ward. Treated as per protocol with iv antibiotic to finish regime of 6 weeks, nutritional support and physiotherapy. After a week, she started having new symptoms of elevated temperature and abdominal pain again.

An emergency ultrasound of abdomen and pelvis concluded that There is moderate/large volume fluid collection with debris in the right paracolic gutter extending in to the left paracolic gutter. Normal appearances of the liver, pancreas, gallbladder and spleen. Hepatopetal portal venous flow. Normal both kidneys and urinary bladder.

Additional to that patient had abdomen/pelvis CT scan with contrast which showed

There is a large intrabdominal walled off collection centred around the right paracolic gutter and extending anterior to the right kidney and then crossing the midline to communicate with another collection within small bowel mesentery. There are small multiple foci of loculated collection within the abdomen. There is small amount of pelvic free fluid. Rt hemicolectomy and ileostomy in the RIF unremarkable.

No free intraperitoneal gas. No other significant interval changes.

Opinion: Large abdominal collection has developed.



As per the scan findings, the patient underwent drainage of the collection under Ultrasound guidance and the drain was of about 500 mls and a sample of that collection was sent for biochemistry, cytology as well as culture and sensitivity. The results came back as thick fluid rich in amylase and high sugar content with no bacteria grown.



The patient condition did not improve as expected and at this stage and after MDT discussion, the patient had further scanning including another CT scan with contrast, MRCP, water soluble X-rays and another percutaneous drainage under U/S guidance.



Ultimately, the patient progressed well and discharged after spending 9 weeks in the hospital and developing different complications of long bed ridden patients. The follow up for this patient completed 2 years and no further complications

reported and her spine x-rays showed very satisfactory outcome of the surgery.

Discussion

Post-operative spinal surgery pancreatitis is still a rare complication after scoliosis correction. The first study in literature was published in 1991 by Leichtner, A. M, et al in Pancreatitis Following Scoliosis Surgery in Children and Young Adults . Where authors concluded that: Forty-four patients undergoing single-stage surgery for scoliosis were monitored for biochemical and clinical evidence of pancreatitis. Six patients (14%) developed elevation of both serum amylase and lipase levels. Four of these had symptoms or signs suggestive of pancreatitis. Previous studies were done in 1970 where pancreatitis was described as a complication post laminectomy.

The exact mechanism is still unknown and theories about mechanical trauma caused by waves of drilling and realignment of the body as that might cause an avulsion type of trauma. However, why this lead to pancreatitis and nothing to the other organs that is the unanswered question till now. In previous case reports, patients did not need surgical intervention for pancreatitis, unlike the case we present.

The imaging was studied again to figure out the position of the screws used during spinal surgery. They revealed that the pancreas and transverse colon is a long way away from the spine or trajectory of the screws which cannot be the cause for the existing complication.

In available sources it is reported that pancreatitis occurs in the first week post op. In majority of cases pancreatitis did not have fulminant course and was resolved due to conservative treatment. So far, up to our knowledge, there is no literature mentioning need of surgery due to severity of pancreatitis as it took place in our case. Majority of the pancreatitis has mild to moderate character. Borkhuu et al. described only one death in 109 cases of AP after scoliosis surgery, which occurred 48 h after surgery because of sudden shock. There is need to emphasise on possibilities of developing pancreatitis post scoliosis surgery and to monitor more closely following cases to find out the exact cause and how to prevent from this happening again. Moreover, more attention should be paid in diagnosis of complication as our case can be an example as how unpredictable course post op can happen. Not all points from Ranson criteria will be so obvious to make a prompt diagnosis of ongoing pancreatitis.

Such and similar cases which were described in the literature giving an opportunity to reflect if “pancreatitis” should be mentioned as one of the complication on the consent form prior spinal/scoliosis operation especially in multiple comorbidities patient’s groups.

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