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Case Note Reviews

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CASE NOTE REVIEWS

All completed surgical proformas returned to WAASM are reviewed by a first-line assessor. Where there is an educational point to be highlighted or there appears to be factors that warrant further investigation, a second-line assessment is undertaken. A consultant from a relevant specialty in a different hospital prepares this review. Second-line assessments are based on information provided by the surgeon who completed the surgical proforma, and from the case notes. These reports undergo minor editing if necessary, and are anonymised. A selection of the case note reviews, some of which have been edited further to decrease their size, are combined here into a booklet and sent to all surgeons for educational feedback.

Correspondence regarding individual cases presented here is not possible. WAASM welcomes any comments.

Delay in diagnosis of Fournier's gangrene

A 69 year old male was admitted with cellulitis of the lower abdomen and genitalia. Four days later he was taken to theatre for debridement when it became evident that the diagnosis was due to necrotising fasciitis. He was then managed in the Intensive Care Unit appropriately. The sepsis came under control and was in the process of being skin grafted when the patient collapsed and subsequently died, presumably due to a pulmonary embolus.

Comments

Whilst the diagnosis of necrotising fasciitis/Fournier's gangrene may have been thought of at the initial presentation, there is nothing in the hospital notes (neither in the Emergency Department nor in the first two to three days of surgical notes) to indicate that the diagnosis was considered. Furthermore, an ultrasound examination three days after admission detected gas in the subcutaneous tissues, but no surgical intervention was undertaken for nearly another 24 hours.

DVT prophylaxis appeared to have been appropriate throughout the admission, heparin only being withdrawn when the patient was returned to the operating theatre. The final cause of death was presumably a pulmonary embolus although, unfortunately, a post-mortem examination was not carried out to confirm the diagnosis.

Suggestions

Whilst the delay in surgery did not obviously contribute to the cause of death, in this condition delay in surgery can be associated with a high mortality. Cellulitis in the abdominal wall and genital region should have at least caused the surgical team to specifically consider the diagnosis of necrotising fasciitis.

Missed diagnosis leads to unnecessary surgery

Summary

A 60 year old non-self caring man, with a long history of alcohol abuse, presented with apparent pseudo-obstruction. There had been several similar admissions over the preceding six months which had settled on sigmoidoscopic decompression. On this admission his abdomen was noted to be grossly distended which was attributed to pseudo-obstruction with gaseous distension of the sigmoid visible on AXR. Following partial decompression the value of a caecostomy was raised by the surgeon endoscopist. Neostigmine was trialled prior to surgery without success and the patient proceeded to a laparotomy. The operative findings were of liver cirrhosis and gross ascites. No procedure was undertaken and the patient died four days later without a post-mortem examination.

Comment

In essence, this man with medical problems was erroneously labelled and managed surgically. It demonstrates the danger of reviewing the patient from the perspective of their previous (mis-) diagnoses rather than afresh. It is likely that ascites was the main cause of distension from the time of initial presentation and pseudo-obstruction was somewhat of a distraction.

The diagnosis not withstanding, it is not clear why a caecostomy, easily achievable via a Lanz incision (under local anaesthetic if necessary) was undertaken via a midline laparotomy, especially given an albumin of 20 and a concurrent chest infection. Nor why, despite his known history of alcohol abuse, the diagnosis of cirrhosis and ascites did not appear to have been considered. Despite worsening LFT's the liver was never imaged and a medical opinion was not sought until after the laparotomy.

If there is a lesson to be remembered and relearned it is for all of us to carefully examine the patient rather than rely on their past history.

Delay to ERCP may have contributed to death

An 81 year old gentleman with a past history of ischaemic heart disease, AAA repair, chronic renal failure, CAL, CVA, and prostate cancer was admitted in the early hours with abdominal pain, fever, and vomiting. He had been seen two weeks earlier with a similar presentation, and a clinical diagnosis of cholecystitis was made. Biochemistry revealed an elevated bilirubin at 59, WCC at 29.3, and a normal amylase. A diagnosis of cholangitis was reached, and treatment was commenced with broad-spectrum antibiotics, IV fluids, and heparin. The plan was to obtain an ultrasound scan the next day, and arrange an ERCP.

On the following day he was clinically improved, but his bilirubin had climbed to 65, and an ultrasound scan confirmed a thickened gallbladder wall, and dilatation of his intra-hepatic bile ducts. His condition deteriorated 48 hours after admission and before an ERCP could be obtained, and he suffered a cardiac arrest from which he could not be resuscitated. There was close consultation during this period of deterioration with renal physicians, and appropriate supportive management was instituted. It is difficult to assess from the notes what arrangements had been made for ERCP and sphincterotomy, which probably was the most important step in resolving the sepsis which precipitated this gentleman's demise.

Comment

I am mindful of the fact that an ERCP is not easy to arrange as an emergency, relying as it does on other hospital team members, and there is a preference that it should be done only at scheduled lists. This is a reminder that cholangitis can be a fulminant disease, particularly in the elderly, and needs to be treated aggressively with decompression of the bile duct obtained as soon as possible. This gentleman was clearly very unwell at presentation and it is by no means certain that sphincterotomy and drainage would have changed the outcome. If ERCP could not have been scheduled, the alternative would have been radiological drainage by PTC.

Multiple delays lead to death

An 81 year old patient without previous significant medical problems presented with short-term constipation. There was a significant delay in receiving appropriate surgical treatment for what turned out to be a malignant obstruction of the sigmoid colon. Subsequently, the patient had a serious post-operative problem with ischaemic bowel that necessitated a further laparotomy on the fifth day after initial surgery. A day later the patient died from multiple organ failure.

Comment

My review does indicate some areas of concern and also areas of consideration. The main cause for concern relates to the delay in diagnosis of what was an obvious large bowel obstruction due to malignant stenosis of the sigmoid colon. This patient presented to a public hospital emergency department with a six day history of constipation. There was no previous history and the patient was not taking drugs which could lead to constipation. The patient was sent home from the emergency centre with some oral medications and a suggestion for referral on to the gastroenterology department for a colonoscopy.

The patient returned to the hospital the following day due to vomiting and ongoing symptoms and was then admitted under a medical team. It took three days for the diagnosis to be established, during which time the patient deteriorated quite dramatically. No attempt was made to look for a cause of the bowel obstruction until the surgical consultation was obtained late on the third day. Some method of educating the medical and emergency departments would seem to be appropriate in the context of this event. Direct referral to a surgical unit could have led to a different outcome.

I do not have any major concerns regarding the surgical management, although there are a couple of areas for consideration. The surgery carried out (Hartmann's procedure) was appropriate in the context of an obstructed large bowel. I am not sure from the operative records if measures were taken to ensure that the blood supply to the bowel brought out by a proximal colostomy was viable. It is always a reasonable practice in my opinion to divide the arterial arcade in an open fashion to ensure that it bleeds before tying it off. Unfortunately, the patient developed ischaemic bowel following surgery. The other point of note is the fact that the patient received an epidural for pain control, these are well known to drop blood pressure and it was certainly noted on the record that this was the case, and it may well be prudent not to use epidural in the elderly in these circumstances as it may well also contribute to the subsequent development of ischaemia.

The patient appeared to have made reasonable progress in the context of the major surgery for bowel obstruction, but deteriorated late on day four and certainly early on day five. The urinary output and blood pressure dropped dramatically. There was approximately a ten hour delay from obvious deterioration in the morning until surgery was eventually undertaken. This sort of delay is undoubtedly crucial in terms of survival.

The extent of surgery carried out at the second operation was appropriate because most of the colon appeared

ischaemic. It was noted that the liver looked pale and also some of the terminal ileum was 'ischaemic looking' but was left behind because it was thought inappropriate to continue to do any more aggressive surgery. The pathology report indicates that only the terminal part of the colon was ischaemic and I suspect much of the abnormal looking bowel at the time of surgery, and also the liver, was a consequence poor perfusion secondary to hypotensive shock at the time of surgery. It is very difficult unless one was actually in the theatre at that time to make a comment as to whether or not the remainder of the colon should have been resected at that time.

Inadequate assessment leads to missed diagnosis of intestinal ischaemia

Summary

An 83 year old female presented to a peripheral hospital. The assessing doctor's working diagnosis was of an abdominal aortic aneurysm and as the peripheral facility did not have the necessary diagnostic facilities (U/S and or CT scan) she was referred to a tertiary facility. There she was initially seen in the Emergency Department the same day and was triaged as a priority code 3. No clinical assessment was made, but after an ultrasound was performed, a comment was made that no 'AAA' was seen. At initial assessment, vital signs of concern were a documented temperature of 34.9°c (how was this measured?), a bradycardia of 48 beats per minute and a BP of 161/75. On a background of known cardiac arrhythmia diagnosed at the tertiary hospital with atrial flutter/fibrillation the patient was treated with digoxin and amiodarone. Duration in the tertiary facility was three hours for assessment and management. A final assessment of gastroenteritis was made and the patient sent home on rehydration. In addition, there was thought to possibly be a urinary tract infection and she was discharged with oral trimethoprim.

The patient re-presented to the peripheral hospital three days later with persistent vomiting and was re-admitted with a diagnosis of a left lower lobe pneumonia. Appropriate treatment for this diagnosis was given, but she had persistent vomiting and was not tolerating meals. She was noted to be hypoxic with 0_2 saturation of 89% on nasal prong oxygen therapy. Also, she was now hypotensive at 87/50 mmHg. Two days later she complained of acute abdominal pain and was noted to have generalised guarding. An abdominal X-ray revealed dilated small bowel with air-fluid levels. At this stage a differential diagnosis of ischaemic bowel made and she was transferred to a tertiary hospital.

On arrival, the pulse was 68 per minute and thready, BP 95/44, 70% 0_2 saturation, temperature 35.9°, her abdomen was distended with generalized tenderness and a serum creatinine of 240 where it was previously normal. From the differential diagnosis, it is apparent that ischaemic gut was still not considered despite the medical assessment at the peripheral facility. The patient was admitted to the ICU.

No medical notes are recorded in the hospital folder after the entry on the second admission by the Emergency Department. It appears that a laparotomy was planned. An entry in the Adult Triage Assessment Sheet four hours later states that the patient was taken to theatre - theatre phoned, delayed until further notice. She was seen by a consultant surgeon, HR <30. There were no further entries.

The Discharge Summary after the second admission listed a principle diagnosis of pneumonia. Other conditions were septic shock, acute renal failure, bowel pseudo-obstruction and cardiac arrest. The latter was suffered prior to the planned laparotomy.

Comments

This is a case of a possible misdiagnosis. There was possibly enough information to suspect the diagnosis of ischaemic bowel. An elderly patient who presented with a known cardiac arrhythmia, atrial fibrillation, abdominal pain, hypothermic and bradycardic constitutes a high-risk situation for intestinal ischaemia. She was appropriately transferred to a tertiary facility where, I believe, an inadequate assessment was made. The diagnosis of intestinal ischaemia was not suspected or made until the patient had deteriorated sufficiently to be in an advanced state of septic shock with renal failure, a significant neutropenia (WCC 2.1) and acidosis with a lactate of 2.63. Typically, the symptoms of intestinal ischaemia are greater than the signs until the pathology is at an advanced stage as in this patient.

It appears that there was no senior medical practitioner input into this patient's management where worrying clinical signs were overlooked. This is an area of concern, as early operative intervention would have been the only possible treatment that may have altered the outcome.

Adequate venous thrombo-embolism prophylaxis and improved pre-operative imaging may have prevented death

Summary

This 62 year old patient was admitted for a right radical nephrectomy. The thoraco-abdominal CT scan showed a 10 cm tumour of the right renal lower pole. No venous invasion was reported. Due to its large size the tumour was approached through a thoraco-abdominal approach via the intercostal space between the 10th and 11th ribs. The dissection was difficult and there was some haemorrhage from the tumour resulting in the loss of more than one litre of blood. Otherwise, the surgery

was unremarkable. The pathology report indicated that two specimens were sent. The first was the kidney, the second was labelled renal vein tissue. The pathology report commented that the tumour was extending into the renal vein and it was not possible to determine the exact resection margin. The second specimen was organised blood clot adherent to fibrous connective tissue, possibly vessel wall. There is no mention of this in the operative note, but it would seem there was some uncertainty about the distal extent of the renal vein tumour extension, hence the second specimen.

The patient started unfractionated heparin 5000 U subcutaneously the night after the operation. The post-operative orders requested TED stockings. I am unable to determine if the patient wore these in theatre. On the first post-operative day, the patient had significant pain requiring cessation of his PCA and treatment with IV morphine. On the second post-operative day, the patient was drowsy and had reduced oxygen saturation at times. Opioid overdose was suspected and treated with naloxone and toradol. The attending surgeon visited the patient on both post-operative days and documented this in the notes appropriately. Following the removal of the patient's intercostal catheter, he had an episode of pain and then subsequently collapsed. A resuscitation attempt was made and it was noted that he had asystole with one transient episode of ventricular tachycardia. Resuscitation was unsuccessful. A post-mortem revealed that the patient died of a pulmonary embolus. I have not seen the post-mortem report.

Comment

According to the ACCP guidelines for venous thrombo-embolism (VTE) prevention *(CHEST 2001; 119:132S–175S)* this patient was at high risk of venous thrombo-embolism. Appropriate prophylaxis according to these guidelines consists of unfractionated heparin 8 or 12 hourly starting at least two hours prior to surgery or low molecular weight heparin once daily. If an epidural anaesthetic was to be administered the heparin should be given eight hours prior or two hours after the neuraxial blockade. This patient had a moderate intra-operative bleed. If peri-operative heparin was not going to be given he should have had intermittent pneumatic compression devices if available or at the very least graduated compression stockings. It is unclear if this patient had any appropriate intra-operative VTE prophylaxis.

It is unusual for a pulmonary embolus to be present two days following surgery. The presence of tumour extension in the renal vein and at the venous resection margin raises the possibility that tumour or thrombus was left in the inferior vena cava. Histopathological assessment of the pulmonary embolus found at autopsy may answer this question. Small emboli may have caused the hypoxia on day one with a massive embolus leading to the arrest. There was no indication on the pre-operative CT scan that this patient had venous tumour extension. However, CT is not always reliable in detecting this. When in doubt (particularly with a large primary tumour) an MRI scan or a venous doppler can clarify this issue. If tumour was known to be extending into the IVC pre-operatively it may have changed the operative approach. The IVC could be controlled and opened to allow complete removal of tumour and any associated thrombus.

In conclusion, this patient's death may have been prevented by appropriate VTE prophylaxis and improved pre-operative diagnosis of venous tumour extension.

WAASM note: *coroner's report indicated cause of death as pulmonary thromboembolism, with no sign of tumour in the pulmonary vasculature ("The calibre of some of the clot material was suggestive of origin from the lower limbs").*

Poor post-operative fluid management by a succession of unsupervised junior staff

Summary

This 81 year old gentleman was initially admitted to a non-teaching hospital. He presented with a six month history of fatigue, malaise and a weight loss of more than 7 kg. Two weeks prior to admission, melena was noted. On admission his haemoglobin was 88. Past medical history included chronic airways disease/asthma and hypothyroidism, but there was no history of previous surgery.

The patient was initially admitted to the ward with a plan to perform upper and lower GI endoscopy. He was also transfused two units during the night with frusemide cover. An indwelling catheter was inserted to monitor his urinary output. He continued to pass clots per rectum. Even though he was noted to be haemodynamically stable, transfer to a teaching hospital was arranged.

He was admitted under a medical unit. Upper GI endoscopy only showed gastric erosions. A colonoscopy, carried out five days after admission, revealed a large adenocarcinoma involving the caecum. While under the care of the medical team routine blood investigations carried out revealed that he was hypoalbuminemic. The surgical team was consulted regarding the management of his caecal carcinoma.

He also developed a wide spread erythematous rash. He was known to be allergic to Penicillin, but in the Emergency Department at the non-teaching hospital he had been given 1 gram of flucloxacillin for treatment of 'bilateral ankle cellulitis'. The rash was later diagnosed as secondary to penicillin/flucloxacillin allergy.

The patient was scheduled for a right hemicolectomy

six days after admission. The procedure was carried out by the surgical registrar, supervised by a Fellow. Post-operatively he developed low urinary output and was described by residents to also be fluid overloaded. He was seen by the resident on numerous occasions during the first post-operative night. Management consisted of successive fluid challenges, alternating with intravenous frusemide. It is interesting that an entry made by the resident in the early hours of the following day stated that the patient was haemodynamically stable, but according to the nursing notes, the patient was unstable overnight. When the patient was reviewed by the surgical team later on that morning, cardiovascular investigation, which included ECG and echocardiogram was organised. Later that day the problems of low urinary output and shortness of breath continued. Again, he was seen by various residents and a CVP line was inserted later that evening. This pattern of management continued for the next two days, when his previous medical team was consulted. The patient was finally reviewed by an ICU consultant on the third post-operative evening where he was diagnosed with gross pulmonary oedema, acute renal failure on a background of pulmonary hypertension. The ICU consultant felt that ICU admission at that stage would not be of benefit. He died half an hour later.

Comments

There are certainly a number of issues that need to be highlighted in this case. Firstly, bilateral ankle cellulitis was noted on admission at the non-teaching hospital, but there was no mention of this anywhere else during the rest of his admission. He was noted to have oedema involving both ankles, but in retrospect could this be just secondary to his hypoalbuminemia. A single dose of flucloxacillin was given despite the fact that the patient had a history of penicillin allergy. Thankfully the medication was not continued after the first dose, but nevertheless he developed widespread erythematous rash. The cause of this was not identified until review by a dermatology registrar three days later. This registrar obviously went through the nursing and triage notes from the non-teaching hospital carefully.

This gentleman had a straight forward operative procedure for management of his right colon cancer. Nevertheless, he succumbed just after 48 hours post-operatively. The question as to whether this gentleman was indeed fit for a surgical procedure needs to be asked. There does not appear to be any documentation that he had a history of congestive heart failure pre-operatively. However, he did have quite significant hypoalbuminemia. Post-operatively, four different after-hours residents had trouble managing his fluid balance. It was most unfortunate that none of the residents sought advice from someone more senior. The nursing notes make it clear that the nursing staff were obviously very concerned about this patient's deterioration. The logical decision would have been for this patient to be reviewed by someone more senior and perhaps have been admitted to a HDU or indeed ICU for stabilisation. This may not have prevented his death, but nevertheless he would have been given the best chance of survival.

The issue of fluid balance management/mismanagement has been highlighted by the WAASM. Unfortunately, this was not an isolated case and will certainly not be the last. It is important that residents on night duty have the support and opportunity to seek advice from senior colleagues. It is a shame that the surgical team managing the patient did not take further steps in the active management of this gentleman's fluid balance. Alarm bells should ring if there have been more than four pages of documentation from the previous night regarding fluid balance/low urine output. There is certainly a lot to be learnt from this case. Unless feedback is given to staff, both junior and senior who have been involved in the care of this patient, then cases like this will continue to be a feature in this audit.

Earlier Intervention and a different operative technique may have made a difference in this patients's case

Summary

A 63 year old patient (ASA2) was admitted electively for a repair of a large midline abdominal incisional hernia. The operative technique undertaken included a midline incision and effectively a laparotomy and adhesiolysis prior to dissecting an appropriate pre-peritoneal plane and repairing the hernia with a large sheet of mesh. No particular intra-operative problem or anaesthetic problem was recorded.

Post-operatively, there was initially trouble controlling pain and a degree of hypotension requiring repeated fluid challenge, but nothing that could not be explained by a degree of blood loss associated with the surgery. However, 19 hours after the surgery the nursing notes recorded severe left side abdominal and chest pain associated with tachycardia of 113 and a respiratory rate of 23. At this point there were certainly warning signs of developing severe sepsis. Approximately 30 hours after surgery a number of factors were recorded in the nursing notes. A white cell count of 1.2 with neutrophils of 0.2 suggesting evolving severe sepsis was noted, as was severe left sided chest pain, low urine output, a pulse of 130 and a BP of 72/50. At 48 hours the consultant surgeon was contacted and visited the patient. His RMO noted evidence of septicaemia. Intravenous antibiotics were commenced followed by transfer to the ICU. A re-operative laparotomy was considered, but decided against.

A CT scan performed the next morning showed a

collection on the left side of the abdomen. A second operation was performed later that day, approximately 70 hours after the initial surgery. A small bowel enterotomy and peritoneal contamination was found. The enterotomy was repaired and the abdomen washed out and drained (surgically appropriate). The patient was ventilated on return to the ICU. The ICU post-operative notes document sepsis, anaemia, low urine output and coagulopathy. The patient was also markedly acidotic on blood gases analysis, all pointers of severe sepsis. Approximately six hours after return from theatre the patient became very unstable and suffered an arrest requiring DC shock, noradrenaline and adrenaline infusions. The ICU physician at this point considered Gram negative sepsis. Another two hours later the patient suffered another asystolic arrest and was not able to be resuscitated.

Area of Concern

Unrecognised small bowel enterotomy after adhesiolysis is a well known complication and can occur in the most experienced and competent surgeon's hands. This patient appears to have become significantly septic approximately 48 hours after operation. The consultant surgeon was called and considered sepsis, but according to the RMO's notes at least did not appear to consider the possibility of small bowel enterotomy secondary to adhesiolysis. After surgical review and introduction of intravenous antibiotics there was a period of inaction while a CT scan was performed. While the CT scan did show evidence of a collection, I would question its contribution to the management in this patient's case. The time from recognition of severe sepsis to operative intervention was approximately 12 hours. Given that small bowel enterotomy would be the most likely source of severe sepsis after an adhesiolysis, the patient's outcome may have been improved by undertaking re-operative laparotomy when the significant sepsis was recognised. It was stated that the bacteria grown from the patient's blood was an unusually resistant *E. coli*, and it is possible that a patient with Gram negative sepsis of this nature may have died even with earlier operative intervention.

Area for Consideration

In undertaking incisional hernia repair it is possible to do a pre-peritoneal dissection and dissection of the hernial sac without entering the hernial sac and subsequently avoiding the need for adhesiolysis. Although it is not always possible to do this, if it is feasible it seems reasonable to assume this operative technique does away with the possibility of the inadvertent enterotomy or at least reduces the chance of it.

Death from iatrogenic perforated bladder

This review should be prefaced by commenting how easy it is for a reviewer to sit in judgment when he views the case in retrospect. I doubt that if I had handled the case, the result would be any different. It is also worth recording that the quality of this patient's life was so poor prior to operation, relatives had requested that no further attempt should be made to prolong her life when critically ill in ICU.

This patient was frail and had cancer of the cervix treated with radiation in 1962. She also had an aorto-femoral bypass graft, bilateral ureteric obstruction, and only had one functioning (right) kidney.

She was treated with a permanent indwelling catheter, and on nine occasions in the previous four months the catheter had been expelled. Her quality of life was poor and it was planned to put in a suprapubic catheter. It is not clear from the notes whether this was to be a percutaneous or open operation, but as the bladder was reported as being shrunken I presume an open operation was planned.

When she was taken to theatre she was properly covered with cephazolin, although the dose is not recorded in the operation notes. A red area was seen in the posterior wall and, in retrospect, this was probably caused by the indwelling urethral catheter.

It can be assumed that there was no rupture of the bladder prior to the cystoscopy, and that hydro-dilatation of the bladder to allow visualisation caused the rupture. This was recorded in the operation notes as extravasation, which was seen on the right side of the bladder. A decision was made to do a CT scan to see whether the rupture was intra- or extra-peritoneal, and she was sent back to the ward. She subsequently developed the devastating complication of *Pseudomonas* septicaemia.

She was brought back to theatre eight hours after the original procedure. The bladder was opened and drains were put in place, and the defect in the bladder was closed with 2/O chromic and a suprapubic tube inserted.

Despite all attempts at critical care, the patient had a downhill course and died three days later.

Comment

It would have been better at the time of the original surgery, when it was apparent that extravasation was present, to open the bladder and place drains both intra- and extra-peritoneally, and also to put the suprapubic tube in place. It is possible that if this were done at the time, the outcome might have been different. In retrospect, the antibiotic chosen for prophylaxis was not appropriate for *Pseudomonas*, but there is no record in the notes that *Pseudomonas* was cultured pre-operatively.

I do not think the eight-hour delay between doing the cystoscopy and eventually taking her to theatre should be criticised. It is interesting that the surgeon thought that a longer period of resuscitation should have been attempted prior to the second operation. However, in a recent coroner's case, the surgeon was criticised for not taking the patient to theatre and planning to resuscitate a patient overnight.

In retrospect, if the surgeon had continued, as planned, to put in the suprapubic tube at the time of the original operation and placed drains there and then, the outcome might have been different. However, this would have meant that the patient would have survived with a sad quality of life.

Hypoalbuminaemic jaundiced patient undergoing pancreatico-duodenectomy

A fit patient in the late 60's presented with three weeks of obstructive jaundice due to a peri-ampullary carcinoma. An ERCP was performed prior to surgery without biliary drainage. The patient had a pre-operative bilirubin of 166 mol/L, an albumin of 28 g/L and normal renal function. There is no documentation of a pre-operative assessment in the clinical notes. A pancreatico-duodenectomy was performed without intra-operative complication and a feeding jejunostomy inserted. The patient was initially managed electively in ICU. Serum albumin was noted to be 16 on the first post-operative night and the patient subsequently developed increasing ascites and peripheral oedema. On the fourth post-operative day the patient became oliguric and hypotensive, but was afebrile with a mildly elevated serum lactate. The patient was returned to ICU and a CT scan reported hepatic portal venous gas, gas in the bowel wall and a subphrenic collection. Urgent laparotomy revealed ascites with no collection, no evidence of gas in the bowel wall and that all anastomoses were intact. A loop of bowel was noted to be trapped below the jejunostomy with dilatation and some mottling, but on delivering this into the abdominal wound, there was rapid return of bowel colour. The jejunostomy was reinforced and the patient returned to ICU. He subsequently developed an acute myocardial infarction with increasing inotropic support and renal failure. The patient died 14 days after the original procedure, following withdrawal of active support. Pathology revealed a peri-ampullary carcinoma with six involved lymph nodes and a positive margin at the pancreatic transection site.

Comments

I have no concerns about the intra-operative and post-operative management of this patient. The decision to proceed to a second laparotomy was appropriate and heparin prophylaxis was used throughout. Had this patient not suffered an acute myocardial infarction with subsequent multi-organ failure, there is a reasonable chance he would have survived.

The main issues in this case relate to pre-operative assessment and management and unfortunately this information is not available. I would make a plea that in the event of an unexpected death at a private hospital, that specialists ensure that their pre-operative correspondence is included in the medical notes. I do not have any major concerns in the pre-operative management, but the issues of prolonged jaundice, hypoalbuminaemia and thoroughness of staging need consideration.

The hypoalbuminaemia was presumably related to prolonged obstructive jaundice and may have increased the patient's risk of peri-operative mortality. However, there is no strong evidence in the literature that pre-operative nutrition improves outcome in malignant disease. The introduction of early post-operative enteral feeding following major upper GI resections (in this case via jejunostomy) generally reduces the impact of mild hypoproteinaemia and probably improves outcome. Furthermore, it would have been pointless in this case without introducing pre-operative biliary drainage.

Likewise, pre-operative biliary stenting has not been shown to influence the outcome following pancreatic surgery because it takes several weeks for hepatic indices to normalise. However, I believe consideration could have been given to biliary drainage in this patient with prolonged jaundice and hypoalbuminaemia. The time interval between ERCP and surgery is not known for this patient, but a significant delay between cannulation of an obstructed system and surgery could increase the risk of peri-operative sepsis. The cause of the hepatic portal venous gas is uncertain, but was possibly related to reversal ischaemia of the jejunum superimposed on low-grade cholangitis. Of note, the CT scan reported gas within the small bowel on the left side of the abdomen that corresponded with the dilated loops of bowel seen at laparotomy. In most cases, portal venous gas reflects overt mesenteric ischaemic necrosis and consequently, the associated mortality rate is in the order of 75%. However, portal gas is described in the absence of overt mesenteric ischaemia and may not be associated with significant sepsis.

A final issue to be considered in view of the unexpected advanced disease is whether or not PET scanning was used in assessment of this patient. Demonstration of extensive nodal involvement may have changed the decision to undertake resection.

Post-operative anti-coagulation complicates bleeding and sepsis

An elderly man developed a perianal abscess and necrotising fasciitis. This was probably secondary to the radiotherapy for his prostate carcinoma. His past medical history included a number of previous myocardial infarcts, the last being two years previously. He was taking multiple cardiac medications, including clopidogrel.

In recovery following the initial drainage and debridement he complained of central chest pain. He was admitted to the coronary care unit although at this time there was no compelling evidence on either ECG or blood tests to confirm that he had a further infarct. Repeat investigations the following morning suggested that there probably had been a small infarct.

On admission to the CCU his normal cardiac medications continued. This included aspirin and clopidogrel despite the known intention of a further debridement. The following day the clopidogrel was discontinued, but the aspirin continued. While in the CCU the patient was bleeding spontaneously from the puncture site of an internal jugular CVP line that was removed.

At further surgery (three days later) a defunctioning stoma was raised. The surgeon attempted to do this laparoscopically. This was not easy because of adhesions and persistent oozing and the laparoscopy was converted to a laparotomy. Four hours later he had to be returned to theatre because of ongoing intra-abdominal bleeding. No cause of the bleeding was found, but packs were left in the pelvis. The patient was returned to ICU with now established multi-organ failure and died some 18 hours after the laparotomy.

This patient was a Jehovah's Witness. The notes clearly record that the surgeon discussed with the patient, the family and with their minister the risk of not administering blood or blood products. The patient made his wishes quite clear and only was prepared to accept DDAVP.

Comment

This gentleman had significant cardiac disease and an angiogram while in ICU showed severe LAD stenosis, albeit unchanged from a previous angiogram two years previous. He was clearly at risk of a peri-operative infarct, but there was no alternative other than to debride the abscess and necrotising fasciitis. With this combination the development of multi-organ failure was always possible, even probable.

Although I do not believe they had any impact on the outcome, I think two points are worthy of note. Firstly, despite the clinicians being aware that further surgery was highly probable, the clopidogrel was continued on his arrival in the CCU. The fact that the patient was taking clopidogrel prior to surgery probably means the additional dose was of no significant consequence in this particular case. However, in a patient who had not been receiving clopidogrel, its administration (along with the continued use of aspirin) at this time would undoubtedly have caused excessive bleeding. There was a failure of communication between CCU staff and the surgeon.

Secondly, I question whether raising the colostomy laparoscopically was a wise option, all be it well intended. Absolute haemostasis was going to be essential and this would best be achieved with an open procedure. As it happened the laparoscopic procedure was converted (because of oozing) so the only adverse consequence was a slightly longer operation.

Refusal of a CT scan leads to futile surgery in the presence of incurable lung cancer

Summary

This elderly patient presented with sudden abdominal pain and a clinical picture of sepsis and peritonitis. The patient had a known incurable primary lung cancer and some weeks prior to this admission, had undergone debulking of a cerebral temporal lobe metastases for intractable seizures. Clinical assessment at presentation revealed signs of generalised peritonitis and the differential diagnosis included a perforated duodenal ulcer. The surgical team requested an abdominal CT scan on the basis that the presence of metastatic disease would have steered them away from performing a palliative laparotomy. The patient had a PET scan prior to their cerebral surgery indicating no other site of distant disease and on this basis CT scan was refused by radiology. The patient underwent a laparotomy with findings of extensive liver and peritoneal metastases and a small bowel perforation due to malignant disease. A small bowel resection and primary anastomosis was performed. The patient's clinical condition deteriorated rapidly within 24 hours of admission and the patient was kept comfortable with a morphine infusion.

Comments

Whether or not to undertake emergency abdominal surgery in a patient with incurable malignancy is a frequent clinical dilemma. In retrospect, this patient's laparotomy clearly represented futile treatment given the extent of disease and their rapid painful deterioration within 24 hours of surgery. The patient had clinical signs of peritonitis and it was really a question of whether surgery was to be undertaken at all, irrespective of the cause of the acute abdomen. The resident has recorded patient comments on the day following surgery stating 'I want to die, just let me die'. This raises the question as to whether the patient really wanted palliative surgery or whether or not his family had pushed him into it. I

suspect the surgical team should have made a stronger case for non-operative palliation.

Heroic but futile treatment precedes death

Summary

An elderly patient in their 90's was admitted with pneumonia by a medical team. Previously, the patient had been fairly independent, with meals provided in a retirement villa.

The patient was treated initially with CPAP, but continued to deteriorate. The patient was ventilated electively approximately nine hours after admission to hospital, which appears to have been due to a MERT call. It was decided to continue ventilation and ICU treatment despite of their age as the patient had been fairly active prior to this episode. The patient improved somewhat and was extubated after eight days, but remained in ICU. The abdomen had become progressively distended with some possible overflow incontinence.

On the 11th ICU day a surgeon was consulted for pseudo-obstruction with gross gaseous distention. A laparotomy and total colectomy was decided upon. A splenectomy was required for splenic bleeding inter-operatively. The operation was performed in the early evening and took approximately three hours. Post-operatively, the patient required ongoing ventilation. A very prolonged ICU stay ensued with a trend to gradual deterioration over a period of 24 days until death without further laparotomy.

Comment

The medical, surgical and anaesthetic care was technically of high standard. There was no delay in treatment, DVT prophylaxis was given and ICU care was used both pre- and post-operatively. I believe that there were no adverse events in this case.

However, this case illustrates the importance of avoiding heroic, but almost certainly futile treatment in a patient of advanced age in extremis. I would question the wisdom of admitting a patient of such advanced age with pneumonia to the intensive care unit for ventilatory support. Once a life-threatening surgical complication (in this case pseudo-obstruction) was recognised then a surgical consult is possibly reasonable. The surgeon has a duty to act decisively, but also to recommend against futile treatment which defies common sense.

I believe that in this case a strong recommendation against surgery should have been made. If the family or the patient were insistent upon surgery against advice then a second opinion could have been sought.

Death from aspiration pneumonia potentially preventable

Summary

An 83 year old patient with a number of medical problems including Parkinson's disease, bipolar affective disorder, frontal lobe syndrome, atrial fibrillation and peripheral vascular disease presented for investigation for iron deficiency anaemia.

A stenosing carcinoma of the sigmoid colon was found and the patient underwent a sub-total colectomy. The pathology report confirmed an extensive stenosing carcinoma of the sigmoid colon with nodal involvement.

The patient was initially well following the surgery until the development of progressively large and more frequent vomiting episodes. The episodes occurred on the 5th, 6th and 7th days post-operatively. A loose bowel action was also noted on the 6th and 7th post-operative days as well. Unfortunately, the patient died on the 8th post-operative day.

Comment

With acknowledgement by the surgeon and the clinicians involved in the patient's post-operative care regarding the patient's general pre-operative state, the procedure of a sub-total colectomy was (in my opinion) more extensive than really was required. A localised sigmoid colectomy would perhaps have been the more preferred option in this patient.

With respect to the post-operative vomiting, the usual post-operative ileus would have been compounded by the more extensive procedure and even more so in this patient should they have been receiving medication for Parkinson's disease (pericyazine). This has anticholinergic side-effects (the hospital notes are unclear on this point and simply state "give the patient usual medications"? – pre-operatively).

A nasogastric tube should have been inserted earlier and certainly on the second day of post-operative vomiting which may have prevented an aspiration pneumonia which is almost certainly the final result causing the death in this patient. It is my view that the post-operative vomiting could well have been prevented in this patient. However, the longer term prognosis was obviously poor in view of the extensive nature of the carcinoma and the patient's general state of health.