CASE REPORT

Caecal volvulus: a consequence of acute cholecystitis

Ghulam Ali Anjum,¹ Sarah Jaberansari,² Kayode Habeeb¹

¹Department of Surgery, Macclesfield District General Hospital, Macclesfield, Cheshire, UK

²Department of General Surgery, Macclesfield District General Hospital, Macclesfield, Cheshire, UK

Correspondence to

Ghulam Ali Anjum, drghulamali@hotmail.com

SUMMARY

Caecal volvulus is an uncommon cause of closed loop intestinal obstruction which can lead to caecal gangrene and high mortality. Delay in diagnosis is one of the causes of this high mortality. Caecal volvulus is reported to be associated with previous abdominal surgery in most cases. We present the first reported case of caecal volvulus following/associated with acute cholecystitis.

BACKGROUND

Caecal volvulus is an uncommon cause of closed loop intestinal obstruction. It is a result of axial twisting involving the caecum, ascending colon and terminal ileum. If persistent, volvulus will cause vascular compromise which may proceed to caecal gangrene and bowel injury and carries a high mortality, up to 40%.¹ One of the causes of this high mortality is delay in diagnosis and treatment. Caecal volvulus is reported to be associated with previous abdominal surgery in up to 68% of cases.²⁻³ We present the first reported case of caecal volvulus following/associated with acute cholecystitis in a view that it will help early diagnosis/suspicion of the condition.

CASE PRESENTATION

An 82-year-old woman presented to the A&E department at 2:00 with epigastric pain localised to the area with no radiation, shortness of breath, nausea and sweating. Pain gradually worsened. On presentation, she was haemodynamically stable, inflammatory markers (white cell count (WCC) 8.3 and C reactive protein (CRP) 6), urea and electrolytes, liver function tests, amylase and 12 h troponin I were within normal limits. Her medical history included three transient ischaemic attacks (TIA), cerebrovascular accident (on clopidogrel), hypertension, angina, asthma, hypothyroidism, basal cell carcinoma and diverticulosis.

She was initially seen by the physicians and was treated for a working diagnosis of 'atypical angina' with an intention to exclude 'acute coronary syndrome'. The diagnosis was not supported by ECG; later, on the same day, the patient had severe pain over the right upper quadrant. The patient was referred to the surgical team at this stage (figures 1 and 2).

Abdominal examination by the surgical team revealed tenderness and guarding over right half of the abdomen mainly upper half. Inflammatory markers were grossly raised by that time (WCC 13.4 and CRP >250). Chest radiograph at this stage did not show any lung consolidation, pleural effusion, collapse or free gas under the diaphragm. Abdominal radiograph showed normal gas shadow

in the fundus of the stomach, duodenal cap and the caecum. No evidence of volvulus or bowel obstruction was reported by the radiologist. A CT scan of abdomen on the same day reported that

1. The gallbladder (GB) contains a 1.4 cm impacted stone its neck and is markedly distended. There is a tiny trace of fluid in the GB fossa and a loop of small bowel appears attached to GB fundus.
2. Malrotation of the large bowel. The caecum lies on the left and a long appendix is directed diagonally back across the abdomen towards the right upper quadrant. No free gas or significant free fluid. No significant bowel dilation or caecal volvulus.

In face of her clinical findings and available investigations, it was felt that she will be a candidate for surgery if conservative management is not successful. Intravenous ciprofloxacin and metronidazole were started and clopidogrel was discontinued. After 3 days of intravenous antibiotics, the patient did not settle and a palpable lump appeared in the right iliac fossa. Her inflammatory markers rose further and the patient was concerned that she had not opened the bowel for the last 3 days. At this stage, a decision was made to proceed with diagnostic laparoscopy.

On laparoscopy, the GB was covered with dense omental adhesions and a massively distended colon was obscuring the view. The procedure was converted to laparotomy and the findings were

1. Empyema of the GB
2. Hepatic flexure adherent to the GB
3. Right colon volvulus with grossly distended caecum/ascending colon. The rotation occurred at the point of adhesion of the hepatic flexure to the GB as this point served as fulcrum for rotation

Cholecystectomy and right hemicolectomy with primary stapled side to side ileo-colic anastomosis were done.

Figure 1 Operative field showing caecal volvulus and inflamed gallbladder (after aspiration).

To cite: Anjum GA, Jaberansari S, Habeeb K. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009705

Figure 2 Preoperative CT scan (prior to development of volvulus) showing inflamed gallbladder adherent to hepatic flexure and proximal transverse colon.

OUTCOME AND FOLLOW-UP

Postoperatively patient was transferred to the high-dependence unit (HDU) where her stay was prolonged for 6 days due to acute left ventricular failure, fast atrial fibrillation and right pleural effusion. After discharge from HDU, the patient stayed in surgical ward for another week for the management of post-operative medical complications aforementioned. There were no postoperative surgical complications.

DISCUSSION

Caecal volvulus is twisting or axial rotation of bowel about its mesentery involving terminal ileum, caecum and ascending colon. Mostly, it is a clockwise rotation; in its complete form, it causes a closed loop obstruction with resultant ischaemia secondary to vascular occlusion.⁴ The incidence ranges from 2.8 to 7.1 per million people per year¹ and comprises 28% of all cases of volvulus.⁴ Condition is more common in women as compared with men and median age of occurrence in the sixth decade of life.²

Predisposing factors to the caecal volvulus include incomplete rotation of the midgut leaving mobile caecum with long mesentery and inadequate fixation of caecum and right colon to the posterior abdominal wall. Up to 25% of cadavers will have mobile caecum on autopsy.¹ An additional factor is usually responsible for the development of caecal volvulus, and high fibre intake, chronic constipation, adynamic ileus, pregnancy, adhesions from previous surgery and distal colonic obstruction are known factors associated with an increased risk of caecal volvulus.^{2 3 5} Recently, cases of caecal volvulus following laparoscopic cholecystectomy⁶ laparoscopic nephrectomy⁷ and laparoscopic appendectomy⁸ have been reported.

Presentation is mostly typical of intestinal obstruction (vomiting, abdominal distension and colicky pain) and may be difficult to differentiate from other causes of obstruction. Initially, the obstruction may be partial, with the passage of flatus and faeces. A tympanic swelling may be palpable in the left side of the midline in about 25% of cases.⁹

Abdominal x-ray (supine film) may show a dilated caecum, a comma-shaped caecal shadow or collapsed caecum. A small bowel loop lying to the right side of the caecum can be another diagnostic feature and a single long fluid level on erect film is also diagnostic. Diagnostic accuracy of abdominal radiographs

ranges from 4% to 50%.^{5 3} CT findings diagnostic for caecal volvulus may include the bird beak, coffee bean or whirl sign.¹⁰ In doubtful cases, a contrast enema may be helpful to confirm the diagnosis with 90% accuracy,² which shows an absence of barium in the caecum and a bird beak appearance.^{3 9}

The management of the caecal volvulus is on the lines of general principles of the management of intestinal obstruction. The specific procedure depends on the severity of the condition and fitness of the patient for surgery. Colonoscopy can be successful in some cases and should be considered for the patients unfit for surgery.¹¹ Laparotomy is required in most of the patients. Right hemicolectomy is required if involved caecum or ascending colon is gangrenous, impending gangrene or perforated. A primary anastomosis is usually possible even in contaminated cases; however, there is an increased risk of mortality in cases of caecal gangrene. A mortality of 12% has been reported in caecal volvulus which rises to 33% in cases of volvulus associated with colonic gangrene.²

There is relatively more choices of procedures in cases where caecum is viable after reduction of volvulus. These procedures include untwisting only, caecostomy, caecopexy and right hemicolectomy. Untwisting only carries a significant risk of recurrence, but avoids the morbidities (14%) associated with bowel resections.¹² Caecostomy has been reported to have a wide range of recurrence (0–25%), mortality (0–33%) and morbidities including abdominal wall sepsis, fasciitis and persistent faecal fistula.⁵ Caecopexy has been reported to be associated with 13% recurrence and 10% mortality.¹³ Considering all the facts, the aforementioned resection appears to be a justifiable procedure with minimal complication and recurrence rate.

As mentioned above, our patient had mobile caecum, but acute cholecystitis provided another predisposing factor as ascending colon/hepatic flexure was adherent to the GB as a part of inflammatory phlegmon. This particular point acted as pivot for rotation of the mobile right colon. As the patient was already being treated for an acute abdominal condition with restricted oral intake, intravenous fluids, analgesia and antibiotics, a full picture of intestinal obstruction was not developed and the symptoms and signs were masked. The volvulus was only discovered on laparotomy.

CONCLUSION

Caecal volvulus is an uncommon cause of bowel obstruction that carries a high mortality. As our case demonstrates, symptoms are difficult to diagnose especially if associated with another acute abdominal condition. A high index of suspicion is needed to avoid delay in definitive treatment. Our patient is unique in the sense that volvulus occurred as a result of acute cholecystitis; during the phase of initial imaging investigations, a full picture of the volvulus was not apparent. Probably, the volvulus developed at a later stage when the hepatic flexure became adherent to the inflamed GB. Early laparoscopy/laparotomy is always beneficial and life-saving.

Learning points

- ▶ Symptoms of Caecal volvulus are masked if associated with another acute abdominal condition.
- ▶ A high index of suspicion is needed to avoid delay in definitive treatment.
- ▶ Early laparoscopy/laparotomy is always beneficial and life-saving.

Contributors SJ helped in data collection

Competing interests None.

Patient consent Obtained.

REFERENCES

- 1 Consorti ET, Liu TH. Diagnosis and treatment of caecal volvulus. *Postgrad Med J* 2005;81:772–6.
- 2 Ballantyne GH, Brandner MD, Beart RW, *et al.* Volvulus of the colon: incidence and mortality. *Ann Surg* 1985;202:83–92.
- 3 O'Mara CS, Wilson TH, Stonesifer GL, *et al.* Cecal volvulus: analysis of 50 patients with long-term follow-up. *Ann Surg* 1979;189:724–31.
- 4 Anderson JR, Lee D. Acute caecal volvulus. *Br J Surg* 1980;67:39–41.
- 5 Beck DE, Whitlow CB. *Colonic emergencies. [book auth.] Simon Paterson-Brown. Core topics in general and emergency surgery.* s.l.: Saunders, 2009:172–4.
- 6 Ferguson L, Higgs Z, Brown S, *et al.* Intestinal volvulus following laparoscopic surgery: a literature review and case report. *J Laparoendosc Adv Surg* 2008;18:405–10.
- 7 Mary E, Kadiyala R. Cecal volvulus following laparoscopic nephrectomy and renal transplantation. *J Soc Laparoendosc Surg* 2009;13:612–15.
- 8 McIntosh SA, Ravichandran D, Wilmink ABM, *et al.* Cecal volvulus occurring after laparoscopic appendectomy. *JSLs* 2001;5:317–18.
- 9 Winslet CM. Intestinal obstruction. In: Bulstrode CJK, O'Connell R, Williams NS. eds. *Bailey & love's short practice of surgery.* 2008:1188–203.
- 10 Moore CJ, Corl FM, Fishman EK. CT of cecal volvulus: unraveling the image. *AJR* 2001;177:95–8.
- 11 Anderson MJ, Okike N, Spencer RJ. The colonoscope in cecal volvulus: report of 3 cases. *Dis Colon Rectum* 1978;21:71–4.
- 12 Tuech JJ, Pessaux P, Regenet N, *et al.* Results of resection for volvulus of the right colon. *Tech Coloproctol* 2002;6:97–9.
- 13 Rabanovici R, Simansky DA, Kaplan O, *et al.* Caecal volvulus. *Dis Colon Rectum* 1990;33:765–9.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow