The management of acute gastric volvulus

Ann. Ital. Chir., 2007; 78: 511-513

Efstathios K. Metaxas, Nicolas Condilis*, Haralampos Kyriazis*, Grigorios Chrisostomidis*, Demetra Tsakri*, Theodoros Kotsifas*

** Department of Thoracic Surgery*
*** General Practitioner, National Center of Energency Care (E.K.A.B.), Athens, Greece*

The management of acute gastric volvulus

Acute gastric volvulus occurs when the stomach or a part of it rotates more than 180° which leads to obstruction (closed loop syndrome), that finally concludes to incarceration and ischemia of the organ.
It can be observed as a result of diaphragmatic hernia, a gap of the diaphragm, pancreatic or gastric cancers, traumatic injuries and fixation anomalies.
Parï first described acute gastric volvulus in 1579, in a patient with diaphragmatic injury after trauma. The first reports of successful surgical repair and necrotomic findings were published in 1866 and 1897 [1,2].

KEY WORDS: Acute gastric volvulus, Diaphragmatic hernia, Surgical treatment.

Introduction

A man of 63 years old came in our hospital's Emergency Department with acute onset of dyspnoea, colicky pain in left lower hemithorax and upper abdomen, flatulence and a feeling of gastric loading.
6 months ago he underwent aortocoronary bypass and since then the aforementioned symptomatology was induced after fatigue.
He also reported left hemi thorax injury with subsequent rib fractures 9 months before his present admission to the hospital. Diabetes Melitus insulin dependent for the last 3 months, was diagnosed 4 years ago. Surgically repaired right kidney lithiasis (1980) and umbilical hermia repair (1998).
His occupation was ship constructor, had never smoked and was a mild alcohol consumer.
From the family history his mother was deceased at the age of 64 by ruptures of abdominal aorta aneurysms. His father, who had 2 incidents of sigmoid volvulus, died during the 2nd episode at 72. His sister died by lung cancer in the age of 54 and his brother by cerebral stroke when he was 57 years old.

Pervenuto in Redazione Giugno 2005. Accettato per la pubblicazione Settembre 2006.
For correspondence: Dr. Efstathios K. Metaxas, Department of Thoracic Surgery, general State Hospital of Nikaia "Saint Panteleimon", Nikaia, Piraeus, Greece (e-mail: metaxask@otenet.gr).

The result of haematological and biochemical control was normal as well as the ECG.
Plain chest and abdominal radiographs showed a large air bulla with 2 air-fluid levels subdiaphragmatically, with remarcable elevation of the left hemidiaphragm without total paresis of the bowel.
The following step with barium revealed the air-fluid levels and the stomach horizontally placed, filling the lower part of the left hemithorax, showing an image of Mesenteroaxial Volvulus.
The patient underwent Laparotomy under general anaesthesia, which confirmed gastric Volvulus Mesenteroaxialy with no subsequent findings (fig. 1) The stomach was placed in its anatomic position and was stabilised with Gastropexy of the Cardia and the greater curvature of the stomach on the anterior abdominal wall and the diaphragm.
The patient post surgically entered the intensive care unit for 24 hours and then in our department; after 5 days he exited the hospital with no complications and free of symptoms.

Discussion

Gastric volvulus is a rare entity, with only 350 cases in international bibliography in last 100 years [3]. It can be seen in infants and adults, with greater incidence in ages over so years, with no prevalent sex [4].

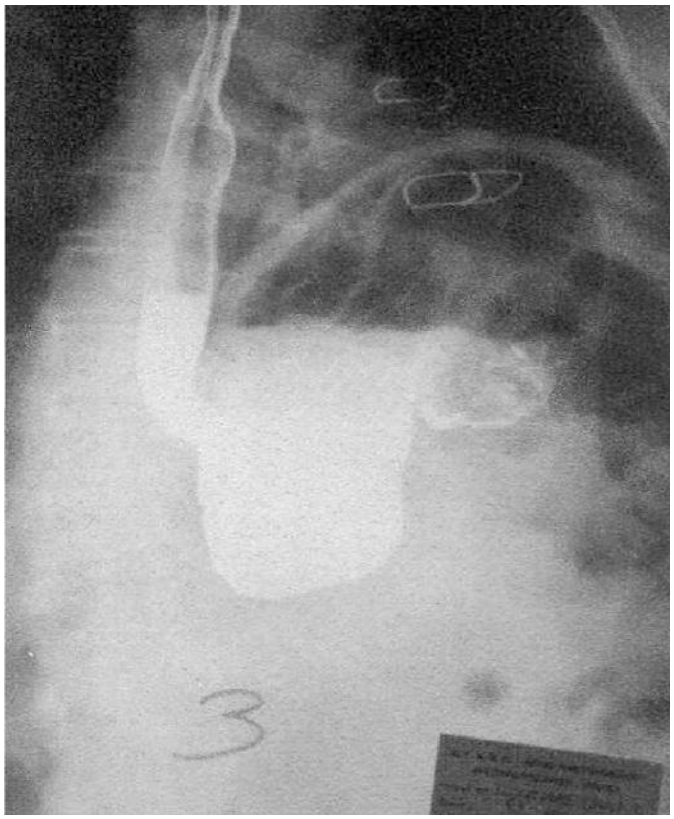

Fig. 1: Acute gastric Volvulus after barium meal.

The main clinical features were recorded by Brochardt [5] and include:
- Epigastric pain with acute onset;
- Sudden vomiting;
- Debility of placing rinogastric tube (Brochard Triad).

During volvulus, the stomach rotates usually organoaxialy and rarely mesenteroaxialy [6], and even in a combination of both.
The acute form of Brochardt, while chronic obstruction of stomach, presents with milder periodical symptoms of abdominal pain and fast filling after meals with concomitant palpable epigastric mass.
Ischemia, leading to gangrene can be observed in 5-28% of acute volvulus cases [4].
Bochdaleik hernia is a result of the incompetence of the pleuroperitoneal membrane to attach with the other diaphragmatic segments, leaving a gap in the posterolateral side of the diaphragm, commonly on the left [7-9]. It is seen more often in men and is the commonest congenital diaphragmatic hernia.
Morgagni hernia, is observed retrosternaly and is more often in women [10-13].
Other causes that may lead to either primary or secondary volvulus [6,14,15,16], include abnormal ligaments of the stomach to other adjacent organs, gastric cancers, organomegalia, peptic ulcers, inflammations or cancer spreading from neighbor hood organs and finally, elevation of the left hemidiaphragm, as seen after pneumonectomy, aortocoronary bypass, phrenic nerve paralysis [8].
Gastric volvulus should, in our opinion, be a possibility in the differential diagnosis in every patient with the history and symptomatology, as described. The diagnosis in made by combining plain chest radiography, barium and endoscopic study.
Gastropexy, is the therapy of choice in acute gastric volvulus, with simultaneous confronting of the possible causes, achieved either with classical laparotomy or laparoscopicaly [17]. The last method, considered acceptable and safe, with minimal morbidity and less hospitalizing time, especially in populations with significant persurgical risk factors.
This surgical therapy is combined with Nissen fundoplication [17,18] for prevention of gastroesophageal reflux. It is a safe method but technically more demanding and surgical experience is a necessity.
Gastro jejuno anastomosis, has been also applied in the past, for the surgical therapy of volvulus, with satisfying results [19].
Alternatively, in chronic types of volvulus endoscopic gastrostomy has been applied in patients with significant health problems or for the elderly [20-23].
In chronic types and in selected incidents, alpha loop endoscopic anataxis [24,25] of gastric volvulus has been described as a temporary therapy, as well as the combination of laparoscopic surgery and endoscopy.
Finally, we point out that expert the classical clinical image, rare cases have been described, showing Paradoxus pulsus [26], tension gastrothorac [27] and image of cardiac tamponade.

Riassunto

Il volvolo gastrico acuto si manifesta quando lo stomaco o una parte di esso ruota per più di 180°, determinando fenomeni di ostruzione (sindrome dell'ansa chiusa) che conducono ad incarcerazione ed ischemia dell'organo stesso.
Può insorgere in presenza ed a causa di un'ernia diaframmatica, di una lacerazione del diaframma, per cancri pancreatici o gastrici, per lesioni traumatiche ed anomalie di fissazione.
Parï descrisse per primo il volvolo gastrico acuto nel 1579, in un paziente riportante una lesione diaframmatica in seguito ad un trauma.I primi lavori scientifici riferiti alla riparazione chirurgica del volvolo gastrico acuto ed ai reperti autoptici ad esso relativi, sono stati pubblicati rispettivamente nel 1866 e nel 1897.

References

1) Berti A: *Singolare attorcigliamento dell'esofago col duodeno seguita da rapida morte.* Gazz Med ltal, 866; 9:139-41

2) Berg J: *Zwei Falle von Axendrung des magens; operation; heilung*. Nord Med Arkin, 1987; 30:6-9.

3) Wolfgang R. Lee JG: *Endoscopic treatment of acute gastric volvulus causing cardiac tamponade*. Journ Clin Gastroenterol,2001; 32(4): 336-39.

4) Carter R,Brewer LA, Hinshaw DB:*Acute gastric volvulus. A study of 25 cases*. Am J Surg, 1980: 140:99-106.

5) Brochard M: *Zun pathologie and therapie des magne volvulus*. Arch Klin Chir, 1904; 74:243-60.

6) Schaefer DC, Nikoomenesh P, Moore C: *Gastric volvulus:An old disease with some twists*.Gastroenterologist, 1997; 55:41-45.

7) Bujanda L, Larrucea I, Ramos F, Munoz C, Sandchez A, Fernandez I: Journal of Clinical Gastro-enterology, 2001: 32(2):155-57.

8) Leitao B, Mota CR, Enes C, Ferreira P, Vieira P, Requeijo D: *Acute gastric volvulus and congenital posterolateral diaphragmatic hernia*. Europ Journ Paed Surg, 1997: 7(2):106-08.

9) Fabrin K, Andersen PV: *Incarceration of ventricle through right sided Bochdalek hernia with symptoms of tension pneumothorax*. Ugrdktift for Laeger, 1994; 156(40):5870-871.

10) EstefanoRodriguez JJ, Tubia Landa-berea J, Esteban Aldrezabal L, Carbajal Cervino C,Berdejo de Lambarri L: *Hernias of Morgagni: Presentation of 2 cases which presented with gastric volvulus*. Revista Espanola de Enferme-dades Digestivas, 1990; 77(3):217-20.

11) Bhasin DK, Nagi B, Gupta NM, Singh K:*Chronic intermittent gastric volvulus within the foramen of Morgagni*. Am Journ Gastroenterol, 1989; 84(9):1106-108.

12) Cybulsky I, Himal HS:*Gastric volvulus within the foramen of Morgagni*. CMAJ: Canadian Medical Association Journal, 1985; 133(3):209-10.

13) Mannix H, Diethelm AG, Pitman JM: *Gastric volvulus within hernia of foramen of Morgagni. Cause of intestinal obstruction*. N Y St Journ Med, 1966; 66(4): 521-24.

14) Tanner NC: *Chronic and recurrent volvulus of the stomach with late results of colonic displacement* Am J Surg. 1968; 115:505-15.

15) Wasselle JA, Norman J:*Acute gastric volvulus pathogenesis, diagnosis and treatment*. Am J Gastroenterol, 1993; 88:1780-784.

16) Smith RJ: *Volvul stomach*. J.Natl. Med. Assoc. 1983; 75:393-97.

17) Teague WJ, Ackroyd R, Watson DI, Devitt PG: *Changing patterns in the management of gastric volvulus over 14 years*. Br J Surg 2000: 87(3):358-61.

18) Katkhouda N, Mavor E, Achanta K, Friendlander MH, Grant SW, Essani R, Mason RJ, Foster M, Mouiel J: *Laparoscopic repair of chronic intrathoracic gastric volvulus*. Surgery, 2000; 128(5):784-90.

19) Farkas AG, Celestin LR: *Gastroje junostomy; A simple method of treatment of gastric volvulus*. Ann Roy Coll Engl, 1986; 68(2):107-9.

20) Tsang TK, Johnson YL, Pollack J, Gore RM: *Use of single percutaneous endoscopic gastro stomy in management of gastric volvulus in three patients*. Digestive Diseases and Sciences, 1998; 43(12):2659-665.

21) Baudet JS, Armengol Miro JR, Medina C, Accanino AM, Vilaseca J, Malagelada JR: *Percutaneous endoscopic gastrostomy as a treatment for chronic gastric volvulus*. Endoscopy. 1997; 29(2):147-48.

22) Altenwerth EJ: *Treatment of an intermittent stomach volvulus using gastropexy via percutaneous endoscopic gastrostomy*. Deutsch Med Woch, 1994; 119(48):1658-660.

23) Joshi MA, Dewoolkar VV, Desai AN, Ananthram P, Karmarkar SR, Trivedi VD, Changlani TT: *Gastrostomy without laparotomy. A percutaneous endoscopic technique: Review of 35 cases*. Indian Journ Gastroenterol, 1993; 12(1):12-13.

24) Newman RM, Newman E, Kogan Z, Stien D, Falkenstien D, Gouge TH: *A combined laparoscopic and endoscopic approach to acute primary gastric volvulus*. Journ Laparoendosc Adv Surg Techn : 1997; Part A. 7(3):177-81.

25) Cameron BH, Blair GK: *Laparoscopic guided gastropexy for intermittent gastric volvulus*. Journ Paediatr Surg, 1993: 28(12):1628-629.

26) Hooper TL, Lawson RA: *Volvulus of the stomach, an unusual cause of pulsus paradoxus*. Postgr Med Journ.1986; 62(727):377-79.

27) Beckmann KR, Nozicka CA: *Congenital diaphragmatic hernia with gastric presenting as an acute tension gastrothorax*. Am Journ Emerg Med, 1999; 17(1):35-37.