Trichobezoar

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A bezoar is an agglomeration of food or foreign material in the intestinal tract. It can be classified according to the primary constituent, as trichobezoar (hair) or phytobezoar (plant material), but may fall into a miscellaneous category including fungal agglomerations, food boluses, chemical concretions and foreign bodies. Here we review the published work on trichobezoar, including current methods of diagnosis and treatment.

PRESENTATION

The typical patient is a teenage girl, but trichobezoar has been described in all age groups including the very young[1]; in one infant it was associated with nursing on a sheepskin rug[2]. In children, bezoars can be associated with pica, mental retardation and psychiatric disorders; according to Barzilai *et al.*[3], only a minority of patients have severe psychiatric disorders.

Usually there are no symptoms until the trichobezoar reaches substantial size; a trichobezoar of 2500 g has been reported[4]. However, it will show itself earlier when there is a structural or functional narrowing of the gastrointestinal tract (e.g. compression of the duodenum by the superior mesenteric artery[5]). The most common features are abdominal pain and intestinal obstruction, but the patient may also present with weight loss, poor appetite or vomiting because the stomach is full all the time.

Complications of bezoars include ulcers (with or without bleeding), perforation, intussusception[6], and obstruction, usually in the terminal ileum but sometimes of the gastric outlet. A bezoar can also lodge in a duodenal diverticulum and cause cholestasis[7]. Malnutrition is a frequent accompaniment and a protein-losing gastroenteropathy has also been described in such patients[8]. Trichobezoars have been associated with Ménétrier's disease[9] and pancreatitis[10]. Fatalities have been reported from obstruction[11].

On examination, the features to look for are alopecia circumscripta and a mobile abdominal mass in the epigastrium. If there are signs of obstruction, this will usually be in the small bowel, though colonic obstruction has been reported[12]. Sometimes a trichobezoar causes intermittent gastric outlet obstruction. The mass may be indentable on palpation – a physical sign introduced by Lamerton[13]. Some of these signs can lead to suspicion of malignant disease.

In the Rapunzel syndrome, a long tail of hair strands extends from the main mass in the stomach along the small bowel to reach the caecum or beyond[15]. Only thirteen cases have been published.

Trichobezoar should particularly be borne in mind when the patient is young and female[14], and especially if there is accompanying alopecia circumscripta and a mental abnormality attended by trichophagy.

IMAGING

In most of the published reports, preoperative diagnosis has been by computerized tomographic (CT) scan. Plain films of abdomen are of limited use apart from confirming a clinical diagnosis of obstruction. Sometimes a plain film of the left upper quadrant will show a mass in the stomach which barium meal will show to be a near-perfect cast of the stomach. Barium studies are of maximum benefit in the small bowel, in differentiating obstruction due to adhesions from obstruction caused by bezoars.

The typical CT image of a gastric trichobezoar is a well-defined ovoid intraluminal heterogeneous mass with interspersed gas[16,17]. If the trichobezoar is distal to the stomach and causing an obstruction, there will be dilated intestinal loops in addition to the intraluminal mass with gas retained in its interstices. Beyond the lesion, the bowel collapses. In the Rapunzel syndrome, CT scans have shown a hypodense lesion in the stomach with a mesh-like pattern. Oral contrast is sparse within the mesh, though prominent around the margins. The presence of a tail is reflected by small rounded areas of hypodensity in other parts of the small bowel[18]. Magnetic resonance imaging seems less useful than CT for diagnosis of trichobezoar, because the signal density is low and easily confused with air[19].

What of ultrasound? Sonographic features are not pathognomonic, but Ko *et al.*[20] noted that, for trichobezoar in the small intestine, an arc-like surface echo casting a clear posterior acoustic shadow within the dilated lumen can suggest the diagnosis. Malpani *et al.*[21] reported three patients with epigastric mass in whom the diagnosis was not suspected clinically. Sonography in all three revealed a

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hyperechoic curvilinear dense strip at the anterior margin of the lesion associated with acoustic shadowing and no through transmission. The diagnosis was confirmed by barium meal and surgery. Similar findings have been reported by McCracken and colleagues[22].

TREATMENT

Endoscopy

Even if surgery is contemplated, a preliminary endoscopy is advisable. It will confirm the diagnosis, and occasionally the offending trichobezoar can be removed by this route. If a trichobezoar has been diagnosed elsewhere in the gastrointestinal tract, endoscopy will also indicate whether the stomach contains any hair material. The typical colour of a trichobezoar at endoscopy (and surgery) is black, irrespective of the original colour of the hair. This is due to denaturation of proteins in highly acidic gastric juice. There may also be a foetid odour due to entrapment of undigested fat in the hair mesh and bacterial colonization; this, of course, poses a threat of peritonitis after surgery[14].

Small trichobezoars can be removed endoscopically from the stomach like any foreign body, but small trichobezoars are not very common in clinical practice. Usually bezoars must first be fragmented or disrupted in some manner, by a biopsy device or water jet under direct vision, the fragments then being removed through a large gastric lavage tube[23]. With large trichobezoars some success has been reported with the bezotome[24], a monopolar diathermy knife with a 15 mm needle; trichobezoars were successfully fragmented and clearance from the upper digestive tract was achieved within 3 days without any complications. From China, 100 cases are reported in which gastric bezoars were fragmented endoscopically with a laser-ignited mini-explosive head[25]; 70% were cured after one treatment, 94% after two and 100% after three. There was one gastric perforation in that series. As a rule, endoscopic removal of trichobezoars is difficult and risky; oesophageal perforation has been reported[26].

Minimally invasive surgery

All too often, trichobezoar is an unexpected finding at laparotomy. An enterotomy is then performed, the offending specimen is removed and the bowel defect is repaired. With a phytobezoar Robles *et al.*[27] reported successful laparoscopic management by fragmentation with Babcock forceps and 'milking' into the caecum. Also laparoscopically, Nirasawa *et al.*[28] removed a large trichobezoar that extended from the stomach into the duodenum[3]. In that case, endoscopic removal had been attempted twice under general anaesthesia; the trichobezoar was retrieved through a gastrotomy and removed via a small suprapubic incision with excellent cosmetic results—but the operating time in this 7-year-old girl was five hours. Filipi *et al.*[29] report a novel method to retrieve a trichobezoar when flexible endoscopy had failed. They used two large-diameter percutaneous gastrostomies with an inflatable balloon and distal foam-rubber stent to ensure gastric positioning, under general anaesthesia. A panvision laparoscope was inserted through one of the gastrostomies and the trichobezoar was removed through the second gastrostomy with standard laparoscopic instruments.

CONCLUSION

Trichobezoar is an uncommon cause of obstruction to be thought of particularly in young females. Radiological investigations may clarify the issue, and the bezoar will sometimes be retrievable by minimally invasive means. Once the trichobezoar is dealt with surgically, the cause of the trichophagia must be looked into. When there is some underlying mental disorder, prevention of further episodes may require a multidisciplinary approach including paediatricians and psychiatrists[30].

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