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**PHYTOBEZOAR CAUSING INTESTINAL OBSTRUCTION: A CASE REPORT AND  
LITERATURE REVIEW**

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**ABSTRACT**

The impaction of undigested food inside the gastrointestinal lumen can lead to concretion of food residues known as bezoars, and when the bezoars is consisted of fruits and vegetables fibers it will be named as “Phytobezoar”.

Clinical signs and symptoms of phytobezoars may differ according to the type, size, and location of the bezoar, and it can be also confused with other medical conditions. The most distinctive clinical figure of bezoars is the mechanical obstruction of intestinal canal.

Phytobezoar can be a serious condition which leads to dangerous complications and sometimes death, so proper clinical examination should be conducted and the patients’ medical and clinical history should be thoroughly investigated.

Phytobezoars are difficult to diagnose due to the misleading signs and episodic nature of them. Simple and plain radio imaging is helpful but it is in many cases not confirmative, so more

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sensitive test should be performed like ultrasound and CT-scan, and even diagnostic surgical procedure can be performed like endoscopy, laparoscopy and laparotomy.

In medical literature the information about phytobezoars is insufficient due to the limited amount of documented cases, and the lack of research about this topic. Most of patients suffering from bezoars usually have had a history of gastrointestinal surgeries. In this article, we are presenting a rare case of intestinal obstruction occurred due to ingestion of unidentified type of mushroom causing food impaction and phytobezoar formation for an old patients with no former history of any type of surgeries.

**Keywords: Bezoars, Enterolith, Phytobezoars, Intestinal Obstruction**

### **INTRODUCTION:**

A bezoar, also known as an (*Enterolith*) is a lump or mass of consolidated foreign bodies or materials usually formed in the lumen of the gastrointestinal tracts (Szpakowski *et al.*, 2008). Bezoars are caused mostly by the excessive impaction of food bolus in the alimentary tract, which often happened with meals very rich in meat, fish bones, or sometimes with some types of vegetables especially which are reach in tannins. The lump or mass formed in the process of impaction can contains other foreign materials such as hair, seeds, tiny beads, or any object that can be ingested intentionally or unintentionally (Senol M *et al*, 2013).

Bezoars are called also “Panzhar” and the word is originally derived from the Persian word “Padzhar” which means antidote which comes from persian ancient myth about the healing properties of the bezoar stones. The famous Andalusian physician IbnZuhr

described it in his writing and it was the first known medical script to explain and describe this medical condition, however almost all around Europe they continued to believe in the myth that bezoar stones have medical and magical properties and they traded them for gold and made even precious jewelries out them. The first real attempt to explain and define bezoars in the modern medicine style was in “1854”by an Irish physician named Quain; he described it as “the mass of intragastric food residue”, while the first preoperative trichobezoar was reported by Stelzner in 1894 (Enis Dikicier *et al*, 2015).

Bezoars as concretions of food materials are susceptible to be shattered and to be moved down along the intestinal tract causing an intestinal obstruction in multiple possible areas mostly in the small intestine like in the terminal ileum and the jejunum. Usually, the confirmed diagnosis of phytobezoar

clinically is extremely difficult, due to insufficient medical/clinical history and the difficulties in linking of the previous incidences prior to the obstruction. The cases of bezoars associated with small intestinal obstruction are rare and most commonly seen in patients with medical history of gastrointestinal tract (GIT) surgeries (Hamzah et al, 2017). In fact, according to (Nasri et al, 2016) a very small number of intestinal obstructions caused by bezoar was reported in healthy subjects with no previous history of GIT diseases, disorders, or surgeries. Even though the incidence of bezoar still rare the complications associated with treatment failure are overwhelming and has a mortality rates that reaches up to 30% due to the GIT bleeding and perforation that can be associated with such a condition (Miguel et al, 2013).

Clinically, the symptoms of an obstruction induced by bezoar normally do not differ from those which are caused due to mechanical reasons. The identification of shape as well as of the location of the ileus can be obtained using multiple imaging methods and technique, while treatment can vary depending on the marks and clinical results of medical examinations (Enis et al, 2015).

Bezoars can be formed from multiple types of materials such as hair (*called trichobezoar*), vegetables and fruits remnant (*called phytobezoar*), dairy products residues (*called lactobezoar*), drugs (*called pharmacobezoar*), and foreign subjects (*called polybezoar*) (Senol et al, 2013).

According to Chintamani et al, bezoars can be also recognized by bile after hepatic and diversion surgeries (Chintamani et al, 2003). The bezoars can be also classified on the bases of their anatomical location. An esophageal bezoar which formed in the esophagus is common in children and known as choke, if it is located in the large intestine then it is called fecalith, and if it is formed in the trachea it will be called tracheobezoars (Baanante et al, 2015).

It has been estimated that bezoars are accounted for about 4% of all mechanical obstructions of the intestine, yet the exact number for its prevalence is still unknown and the most prevalent type of all bezoars is the phytobezoar (Chintamani et al, 2003). Which is formed from food remnants which cannot be digested by digestive system like cellulose and hemicellulose, and when accumulate in the GIT it might cause the phytobezoar. Colorectal obstruction due phytobezoar is extremely rare since the colorectal areas are larger in diameter than

the lumen of the small intestine (Parsi *et al*, 2013). According to Kement *et al* study about 42 disease, it has been noticed that a history of gastrointestinal surgery was the key factor of bezoar formation in 48% of the studied cases (Kement *et al*, 2012).

Even though multiple case reports of phytobezoar caused due to the ingestion of vegetables or fruits (like sunflower, prickly pear, pumpkins, and wild bananas) were detected, to the best of our knowledge cases reported on mushrooms were very rare (feng *et al*, 2016). The prevalence and type or cause of the phytobezoar can be varied on the basis of geographical location and plants varieties available on a specific location, for example phytobezoar caused due to watermelon seed prickly pears ingestion are more common in Middle Eastern countries (feng *et al*, 2016).

The bezoars in general are much more common among children and geriatric people. Patient with mastication disorders, addictive patients, prisoners, and patients with psychiatric illness and disorders are more susceptible to phytobezoar (Szpakowski *et al.*, 2008; Leung *et al.*, 2008).

In the last few decades the prevalence of bezoars in adult populations has dramatically exploded due to the extensive surgical

procedures which are performed on the GIT and due to the continuous unnecessary tampering with human body systems (Leung *et al.*, 2008).

Primary bezoars are caused by the impaction that used to occur in the narrow parts of the small intestine. Typically the bezoars occurs in terminal ileum and in the jejunum with no specific gender or age preferences detected (Teng *et al.*, 2005; Lee *et al.*, 1997).

In this report we are presenting an unexpected case of Phytobezoar caused by mushroom ingestion leading to mechanically obstructed small intestine and we discuss the available scientific literature about the topic.

#### **CASE REPORT**

A new patient was admitted to the ward, transferred from a local hospital the patient was Chinese with 48 years of age presenting with three days of persistent aggravating abdominal pain and distension. The pain was colic and started from the umbilical region then it was radiating towards other abdominal regions extending and involving the whole abdomen, it was associated with intermittent vomiting and severe constipation. With no medical history of any gastrointestinal diseases, complications, or surgery. The case was mysterious and puzzling especially when his vitals appeared to be normal on clinical examination, the

distension was tender and his bowel sound was negligible. On percussion his abdomen was resonant and dull indicating to mass or consolidated material in the intestine. His base line blood tests was completely normal, while the abdominal x-ray presented an expanded and enlarged lumen of the small intestine.

Laparotomy was scheduled by experts to proceed further in investigation and treatment. During the surgery, the serous membrane of the intestine showed to be intact and normal, no colic adhesions were detected; and his mesentery was also normal with no signs of lymphadenopathy. However, his ileum was extremely expanded and enlarged in the distal and proximal segments almost 20cm from the ileocaecal junction. To identify the cause of the swell an Enterotomy was carried out, and it turned out that the cause of the swelling is an obstruction caused by undigested mushroom piece which led to food compaction in the intestinal lumen.

The mushroom was removed and it was measured (5x3cm). The intestinal structure at the impacted area was normal but closed in a single layer; no any deformity, anomalies, or abnormalities were detected in the intestinal tract.

Within few days the patient recovered without any postsurgical complications and

he was discharged on the fourth day after his successful surgery. In postsurgical survey he declared that, a few days prior to his symptoms start he was taking dinner and he swallowed an entire mushroom piece without chewing it properly. He was provided with the proper consultation required for his condition and sent back home.

#### **Discussion:**

Among all four types of bezoars the *Phytobezoars* emerges as the most prevalent. It is mainly consists of vegetables and fruits that are reach in indigestible fibers such as cellulose, hemicellulose, lignin, and fruit tannins for example persimmons, pumpkin, quince, and common guava.

The concretion of hair fibers in the alimentary tract which is known as *Trichobezoars* is rare among normal populations and usually appears in patients with psychiatric issues and in children with mental disabilities (Iwamuro M *et al*, 2015). Bezoars which are caused by drugs like ascholestyramine, kayexalate resin, cavafate and antacids drugs are known as *Pharmacobezoars*, and they are most common among patients which are suffering from chronic conditions and GIT complications. When a newly borne neonates are fed with highly concentrated formulas of secondary cured milk it leads to concretion of

milk forming *Lactobezoars* (Teng *et al.*, 2005).

Among the most important risk factor for bezoars formation is the presence of previous medical history of alimentary tract surgeries like partial gastrectomy, truncalvagotomy, or pyloroplasty, etc. (Teng *et al.*, 2005), and according to Teng *et al.*, almost 50% of all registered cases of bezoars have had a history of GIT surgeries. Intake of food rich in indigestible fibers and contains a high amount of tannins like common guava is also considered to be a risk factor. Also risk factors includes digestive malfunctions and disorders such as lack of gastric sections, lack of motility, dystrophies in the GIT, abnormal morphologies, and autonomic neuropathy (Teng *et al.*, 2005; Iwamuro M *et al.*, 2015).

The most familiar site of impaction is in the narrow parts of intestine including the locations of GIT sphincters like the cricopharyngeal sphincter, or in the constriction in oesophagus, distal ileum, and ileocaecal junction. Foreign objects above than 6cm in long can cause impaction on the second and the third part of duodenum; and rounded bodies which are more than 2.5sm in diameter are likely to cause impaction in pylorus region (Samdani *et al.*, 2007). It has been also found that concurrent gastric

bezoars are responsible for about 21% of all small bezoars (Samdani *et al.*, 2007; Lee *et al.*, 1997).

The most important key factor in successful treatment of bezoars is the early diagnosis of the condition. It is not an easy task to diagnose patient with obstructed intestine since signs and symptoms can be confused with other GIT illness, especially when the case lacks in proper medical history and clear clinical examination (Kia M *et al.*, 2014; Szpakowski *et al.*, 2008). Normally radio imaging investigation should be planned as in the first line investigative steps, even though it is very difficult to provide confirmed final diagnosis especially in case of small bezoars on the bases of the plain abdominal film alone due to the low sensitivity of this method with almost 86% only in case of large food bezoars (Szpakowski *et al.*, 2008).

Ultrasound and CT-scans are much more helpful in the diagnosis of bezoars. Ultrasound can identify the bezoars as an echogenic intraluminal mass and it might show the acoustic shadows of the impacted food if present, but when radiological and ultrasound investigation are inconclusive abdominal CT-scan shall be more effective and sensitive with confirmation rate reaches up to 95% (Szpakowski *et al.*, 2008). Also

laparotomy is usually preformed and considered to be effective and it is compulsory to explore the whole tract to avoid missing any of the existing or occurring bezoars and possible relapse after the treatment (Teng *et al.*, 2005). It is also recommended to provide the patients with preventive antibiotics before surgery as well as post-operative course to eliminate any risks for bacterial infection in site or around it (Luciana *et al*, 2015).

After all, prevention is much better than curing and risk factors for bezoars formation and food impaction should be avoided. Foreign objects should not be ingested, medical and clinical history should be considered, proper monitoring should be applied especially for geriatric, pediatric patients, and those who are suffering from mental and psychiatric conditions.

### CONCLUSION

Intestinal obstructions caused by food impaction and bezoars are uncommon in medical practice and very difficult to diagnose in normal cases, so various type of risk factors should be considered in the process of clinical investigation. Risk factors includes patients with mental disabilities, pediatric patients, geriatric patients, history of GIT diseases and surgeries, poor health and diet, dehydration history, and history of

consumption of strange unfamiliar materials such wild vegetables or plants.

Phytobezoar is a critical and dangerous illness that can cause serious complications and even leads to death so precautions should be taken and proper investigations should be conducted to avoid any possible casualties.

Also the general public should be educated about the danger of ingestion of unidentified or unsafe types of mushrooms especially this nation since it has a huge varieties of wild mushrooms as well as of farmed types which are available in abundance.

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