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CONSERVATIVE TREATMENT OF GASTRIC BEZOARS - LITERATURE REVIEW

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ABSTRACT

Gastric bezoars are defined as hard masses of undigested material located in the stomach lumen. Classifications mainly distinguish four types: phytobezoars, trichobezoars, pharmacobezoars, and lactobezoars. This article discusses conservative treatment methods that allow for the dissolution of masses or their reduction for easement of subsequent endoscopic treatment. A literature review was conducted using the PubMed database from the years 2015-2025.

The symptoms of the disease are nonspecific and include abdominal pain and early satiety. If untreated, they can cause serious complications, including gastrointestinal bleeding, intestinal obstruction and intestinal necrosis. Diagnostic methods mainly include endoscopy, considered the gold standard in the diagnosis of bezoars. Conservative methods include enzymatic substances such as cellulase, papain, and N-acetylcysteine, or chemical substances such as Coca-Cola or bicarbonate. The presented forms of conservative treatment allow for the implementation of effective treatment without invasive procedures, thereby reducing the number of complications associated with the treatment.

This article summarizes methods of conservative treatment for bezoars and serves as a tool for clinicians dealing with the therapy of this condition. As stated before, there are several forms of conservative treatment; however, their differentiation is mainly related to the etiology and origin of the lesion diagnosed in imaging studies. The manner in which the lesion develops determines the selection of the appropriate conservative treatment technique; however, an analysis of the available literature clearly shows that conservative treatment is an effective form of therapy for a selection of patients.

KEYWORDS

Bezoar, Treatment, Conservative, Gastric

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Introduction

Gastric bezoars are defined as hard masses of indigestible material found in the lumen of the stomach or further sections of the digestive tract [1,2,3]. The most common classification used to distinguish between types of bezoars takes into account the material of which the bezoar is composed and distinguishes between four main types: phytobezoars, consisting of plant material such as fibres, skins and seeds of vegetables and fruits; trichobezoars consisting mainly of swallowed hair resulting from mental disorders, pharmaco-bezoars, i.e. residues of undigested medicinal products, and lacto-bezoars, i.e. a form of bezoar originating from undigested products of milk protein metabolism in breastfed infants [1,2]. Symptoms of bezoar may include indigestion, epigastric pain, feeling of fullness in the epigastrium, abdominal discomfort and early satiety. Bezoars can cause serious complications, including ulcers in the upper gastrointestinal tract, leading to bleeding with symptoms such as hematemesis, hematochezia, melena, or chronic anemia [1,3,4]. In the most severe cases, bezoars can lead to necrosis and perforation of the gastrointestinal tract wall as a result of prolonged contact between the bezoar mass and the gastrointestinal tract wall, i.e. the stomach wall. This situation requires treatment to be started immediately after diagnosis [1,2,5]. Diagnostic methods mainly include endoscopic or radiological examinations, but gastroscopy is particularly useful in the diagnosis of gastric bezoars and is recognised as the gold standard in the diagnosis of this pathology. Another aspect demonstrating the advantage of endoscopy is the possibility of taking quick therapeutic action in a situation where the diagnostic examination is transformed into a procedure using endoscopic techniques [5].

The prevalence in the general population is low, with most authors estimating it to be less than one per cent of patients undergoing gastroduodenoscopy, but it varies significantly depending on demographic data and geographical location [1,3]. The main group of patients diagnosed with bezoars are young women who, in the course of mental disorders such as trichotillomania and trichophagia, form trichobezoars by biting and swallowing hair. A review of the literature highlights several effective forms of treatment, including surgical, endoscopic and conservative treatment [5]. Conservative treatment structured to reduce the mass of bezoars and improve endoscopic or surgical treatment is the main focus of this review and is dedicated to addressing the clinical problem of diagnosing and treating this rare but still present condition in society.

Materials and methods

A review of the literature regarding conservative treatment of gastric bezoars was performed using the publicly available scientific database PubMed. In the evaluation of effective treatment methods, papers from the years 2015-2025 were taken into account, while in order to outline the historical background of the treatment of this disease, some works going beyond this scope were also used. The works were selected using the following key words: "bezoar", "treatment", "conservative", "gastric".

Results

According to the literature review, there are three groups of bezoar treatment methods: surgical, endoscopic and conservative [1,2,5]. Each of the above-mentioned groups has different applications in the treatment of specific types of bezoars, but it is important to remember and emphasise that there are specific contraindications to the use of particular treatment methods in different clinical situations [5].

In the past, surgical treatment was the primary method of treating most forms of bezoars [4]. Currently, with the dynamic development of medicine, including minimally invasive techniques, it is reserved almost exclusively for patients with problems such as obstruction, gastrointestinal perforation or gastric bleeding that

cannot be controlled by other methods. It can therefore be concluded that surgical intervention is inevitably reserved for the management of surgical complications associated with bezoars, with the treatment of this pathology as the so-called gold standard [2,4].

Endoscopic treatment is widely recognised as the first-line treatment for bezoars [4]. It is the most commonly used treatment method worldwide, mainly due to the good availability of endoscopy laboratories, the low cost of the procedure and its much lower invasiveness compared to surgical techniques [1]. The aim of endoscopic treatment is to achieve mechanical fragmentation and removal of the foreign body in the form of a bezoar using various instruments used in endoscopy [5]. The advantages of this method include relatively quick removal of the problem and the possibility of immediate assessment of potential local complications occurring at the site of the bezoar, i.e. potential ulceration of the gastrointestinal tract wall or localisation of the source of bleeding [1]. A significant aspect of this treatment technique that should be given special attention is the fact that frequently repeated endoscopic procedures become high-risk procedures and/or require sedation or general anaesthesia with anaesthesiological assistance [1].

Alternative treatment methods are conservative methods aimed at dissolving the bezoar using various substances, and thus remain complementary to surgical methods or, in cases of small bezoars, may constitute a separate form of treatment [2]. The authors of scientific publications recommend the use of enzymatic compounds such as cellulase, papain and N-acetylcysteine, or chemicals such as Coca-Cola, sodium bicarbonate or pineapple juice [1,2,3,4,5,6]. This highlights one of the advantages of conservative treatment, which is the easy availability of substances used to reduce the mass of the bezoar and the ease of their use.

The most commonly mentioned compound used in dissolving bezoars remains a Coca-Cola-type drink [1,2,4]. Its effectiveness results from its acidic properties and the presence of carbonic and phosphoric acid in its composition, which effectively break down bezoar masses, causing a reduction in the size of the lesions [4]. The authors of the publication report a 42–50 per cent success rate for conservative treatment alone and an additional 42 per cent success rate after subsequent endoscopic removal of the lesion, which ultimately shows an effective treatment outcome in over 90 per cent of patients [1,4]. The results of the treatment used are comparable, regardless of differences in methodology and doses of Coca-Cola-type drinks [1]. Undoubtedly, a major advantage of this method is the negligible number of reported adverse effects resulting from the non-invasive nature of the conservative treatment. After reviewing the literature, one study was identified in which two patients experienced intestinal obstruction within one to six weeks after conservative treatment with a Coca-Cola-type drink. No other side effects were reported in this group of patients [7].

One group of patients diagnosed with food bezoar are those who are hospitalised for long periods of time, remain in serious condition, and require enteral feeding. Long-term nutritional treatment using a feeding tube may be one of the causes of bezoar formation, and one of the causes of the described situation is undoubtedly the weakened motility of the gastrointestinal tract and the weakened condition of patients undergoing this form of treatment. The goal of treatment in such patients is also to reduce the size of the bezoar or to effectively remove it from the gastrointestinal tract. To this end, some authors propose the use of 8.4% sodium bicarbonate, confirming the effectiveness of this treatment method both in vitro and in vivo. Interestingly, in these specific cases, treatment with Coca-Cola-type drinks proves to be completely ineffective due to the acidic pH of these particular substances [4,5,6,8]. This situation provides broader insight into an interesting issue, namely the importance and necessity of understanding the aetiology of bezoars in selecting an effective conservative treatment method [4,5,8].

Another group of substances used to treat bezoars are enzymatic compounds such as cellulase, papain and N-acetylcysteine. These substances have historically been used to dissolve bezoars with good efficacy, but some of them have shown adverse effects and, with the development of medicine and forms of treatment for these conditions, they have been withdrawn from use [1,2,4,5]. One of the complications described in studies related to the use of papain in treatment is the high risk of oesophageal perforation, gastric wall ulceration and hypernatraemia. Therefore, papain is currently not available for the conservative treatment of gastrointestinal bezoars [5]. One of the most effective enzymatic substances used in conservative treatment is N-acetylcysteine. Its mechanism of action involves breaking down disulphide bonds in mucus, which reduces its viscosity and thus facilitates its removal from the gastrointestinal tract [9]. This allows for the breakdown of mucopolysaccharide fibres, which are particularly prevalent in gastric milk bezoars [9]. This form of treatment is particularly useful in infants, who are a group of patients particularly prone to the formation of lectobezoars due to the type of feeding they receive [9]. The greatest advantages of this therapy are the minimal invasiveness of the described treatment method, the easy availability of N-acetylcysteine, and the lack of data on complications after the use of this substance in the group of patients in the presented studies.

Summary

As presented in the above paper, there are several forms of conservative treatment for bezoars. The choice of the appropriate treatment method depends largely on the aetiology and composition of the bezoar, which is why it is extremely important to collect a thorough medical history and select the appropriate diagnostic methods. The importance of rapid diagnosis and early detection of bezoars should be emphasised due to the possibility of complications associated with the presence of bezoars and their impact on the walls of the gastrointestinal tract. An analysis of the available literature clearly shows that conservative treatment is an effective form of therapy for patients with gastric bezoars. The main aspects taken into account in conservative treatment are the minimal invasiveness of this form of treatment, which is particularly useful in severely ill patients with multiple diseases or in infants, the possibility of delaying surgical treatment with good control of the patient's condition, and the possibility of using treatment in patients with bezoars who do not consent to surgery. The results of the analysed studies indicate that conservative treatment is an effective and safe form of treatment for patients with gastrointestinal bezoars, ensuring a reduction in size or complete dissolution of the lesion in many patients without the need for invasive procedures, while facilitating endoscopic removal in most other cases.

Conclusions

The relatively small number of conservative treatment methods and the small study group presented in the studies included in the literature review constitute an extremely interesting area of research. Conservative treatment of gastrointestinal bezoars is a form of treatment that can be divided into two study groups. The primary group of patients is those in whom conservative treatment is aimed at reducing the size of the lesion and its effective removal using endoscopic techniques after minimising the occurrence of complications associated with the removal of a large lesion. The second group consists of patients in whom conservative treatment allows for the non-invasive removal of the bezoar, virtually eliminating the complications associated with treatment. The patient groups presented in this study confirm that bezoar, as a rare gastrointestinal pathology, remains an important disease entity associated with serious long-term complications related to the development of the disease. This study provides an overview of available conservative treatment options, which is extremely useful for clinicians who deal with the treatment of gastrointestinal pathologies on a daily basis. In summary, early diagnosis based on characteristic abdominal symptoms, combined with appropriate imaging or endoscopic diagnostics, can quickly lead to the initiation of appropriate treatment and the avoidance of life-threatening complications and long convalescence for patients. However, the most important aspect of using conservative methods remains their proven effectiveness in supporting surgical treatment or complete removal of lesions from the gastrointestinal tract, with a significantly lower risk of treatment-related complications compared to patients undergoing surgery or endoscopic procedures.

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