

ESOPHAGEAL BALLOON DILATATION – A COMPLICATION

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БАЛОННА ДИЛАТАЦИЯ НА ХРАНОПРОВОД – УСЛОЖНЕНИЕ

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Abstract:	Esophageal stenosis is a narrowing of the esophageal lumen, which can vary in length – from about a couple of millimetres to a few centimetres. The reasons which can lead to such stenosis can be: congenital, for example atresia, esophageal ring; as a consequence of esophagitis after consumption of corrosive agents, and due to esophageal tumor processes or tumors of neighboring structures too. The therapeutic approach is different and depends on the reason and the condition: resection of the engaged segment, stenting, balloon dilatation, injecting of botulinum toxin. This was the case of a 47-year-old female patient who was admitted to the gastroenterology department with complaints of difficulty swallowing solid foods and liquids for a long time, as well as vomiting of the food immediately after eating. She previously underwent therapy with proton pump inhibitors, without any significant effect. After laboratory, imaging and endoscopic examinations, a stenosis of the distal part of the esophagus was found. Proximally, the esophagus was dilated and contained food residue. The chosen therapeutic approach was balloon dilatation of the engaged segment. Twelve days after the balloon dilatation, the patient presented to the hospital again, with complaints of pain in the thorax, fever and elevated inflammatory markers. Diagnostic imaging detected a heterogeneous collection, located in the distal part of the esophagus, which was narrowing the lumen. During the draining under endosonography control, a thick, pus-like fluid was flowing out.
Key words:	esophageal narrowing, proximally dilated esophagus, abscess
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Резюме:	Стенозата на хранопровода представлява стеснение на лумена, което може да бъде на различно протекание – от няколко милиметра до няколко сантиметра. Причините, водещи до тези стеноза, са различни. Те са: вродени, като например атрезия, езофагеален пръстен; вследствие на езофагити след прием на корозивни материали, както и от туморни процеси, произхождащи от хранопровода или от съседни структури. Терапевтичният подход в зависимост от причината и състоянието е различен: резекция на ангажирания сегмент; стентирание; балонна дилатация; инжектиране на ботулинов токсин. Представяме пациентка на 47 години, която постъпва в отделението по гастроентерология с оплаквания от трудно преглъщане на твърди храни и течности с голяма давност. Повръщане на храна непосредствено след приема ѝ. Провела е лечение с инхибитори на протонната помпа, без да има задоволителен ефект. След извършването на лабораторни, образни и ендоскопски изследвания се установява стеноза в дисталната част на хранопровода. Проксимално е дилатиран със задържани хранителни материи. Избраният терапевтичен метод е балонна дилатация на ангажирания сегмент. Дванадесет дни след извършването на балонната дилатация пациентът постъпва повторно в болницата с оплаквания от болка в гръдния кош, фебрилитет и повишени възпалителни маркери. От извършените образни изследвания се установява хетерогенна колекция, разположена в дисталната част на стената на хранопровода, която стенозира лумена. При извършването на дренаж под ендоскопска ултрасонография изтича гъста гноевидна течност.
Ключови думи:	стеноза на хранопровод, проксимално дилатиран хранопровод, абсцес
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INTRODUCTION

The aim of the case report was to present one case of the uncommon disease esophageal achalasia. The individual stages of diagnostics and therapy were tracked, as well as the more infrequent consequences of that procedure, namely an abscess, and the following diagnosis and drainage of the abscess collection. The aim was to improve the understanding of the possible post-procedure complications after the dilatation of the esophagus and the significance of the multidisciplinary approach in their diagnostics and management.

CLINICAL CASE

This case is of a 47-year-old female patient who was admitted to the gastroenterology department with complaints of difficulty processing food, both solid and liquid, as well as of vomiting after eating. The complaints had been continuing for a long time. She underwent therapy with proton pump inhibitors, without satisfactory result. At the moment of admission, she was fever-free, without clinical or laboratory signs of any ongoing inflammatory process. The obtained endoscopic examination, the gastroscopy, found a dilated esophagus, filled with food residue. The mucosa in the distal part was whitish, there was a light difficulty in the passing towards the stomach. The visual examinations, barium swallow-contrast media esophageal examination and the computed tomography, found dilatated esophagus up to 30 cm, filled with food residue, which was getting narrower and cone-like at the level of the gastro-esophageal junction (Fig. 1). There were no signs of esophageal wall-thickening at the stenosis-level or compression by neighboring structures. The described changes are like those in achalasia. After a consideration, the decision to perform a balloon dilatation of the described segment was taken. A single dilatation was performed with a balloon size of 30 mm. During the first days post-procedure the patient was had no complaints. Twelve days after the manipulation, the patient was admitted to hospital again with complaints of pain in the thorax for a couple of days and fever from the day before. With evidence of elevated levels of the inflammatory markers C-reactive protein 194 and leukocytes 20.23, a non-contrast and contrast-enhanced CT of the thorax was performed, and it was found that the esophagus was dilated along its entire length and the dilatation is up to 3/6 cm long, and in its distal part was visible a clear-shaped capsulated heterodense collection with dimensions 3/4/3

cm, which seemed to be located in the esophageal wall. The collection was with non-contrast density about 23HU, which did not change significantly on the post-contrast series (Fig. 2). A magnetic-resonance examination was performed (Fig. 3), but not in its entirety, because of non-cooperation by the patient. The described formation presents heterointense on the T1 and T2 times (there were no performed series for determining the diffusion of the water molecules, and with contrast media). The endoscopic ultrasound (EUS) found a hypoechoic collection with multiple floating echoes (Fig. 4). After performing a puncture under EUS control through a needle the size of 19G, thick turbid pus-like liquid was aspirated (Fig. 5). After the performed drainage, the inflammatory markers normalized and the pain syndrome was reduced and after that fully disappeared.

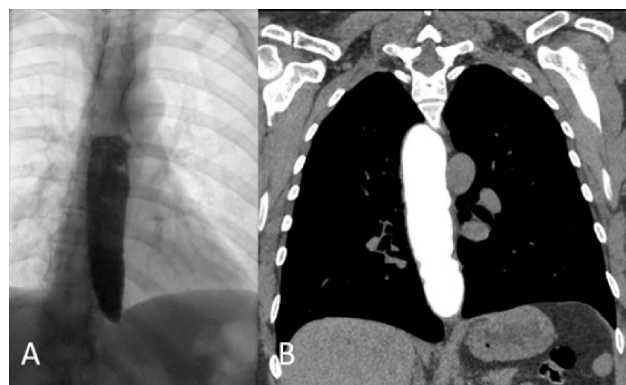


Fig. 1. Contrast examination of the esophagus. Barium swallow (A) and computed tomography (B). Stop at the level of the GEJ with proximal dilatation of the esophagus

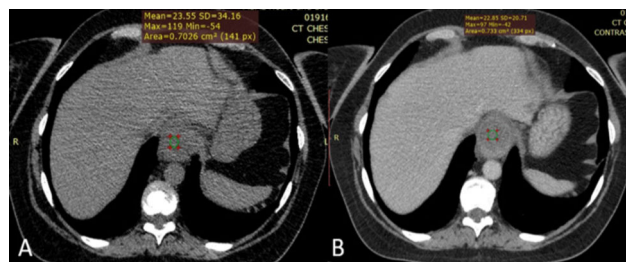


Fig. 2. Non-contrast(A) and contrast-enhanced (B)CT. Collection located in the wall of the stomach, that does not change its density

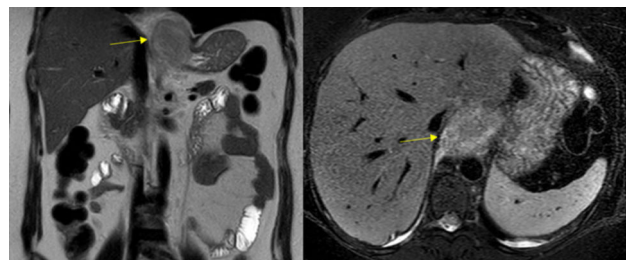


Fig. 3. MRT, T2 series, with and without fat saturation. There is a heterointense saturation in the wall of the esophagus



Fig. 4. EUS hypoechoic collection with multiple floating echoes



Fig. 5 Puncture under EUS control

DISCUSSION

The esophagus provides the connection between the mouth and the stomach - the place where the food passes through. Its approximate length in adults is 25 cm. Proximally it is connected to the pharynx, and distally to the stomach. Its transverse size is about 1 to 2 cm. It is a tubular muscle [1]. Conditionally, it is divided into three parts – cervical, thoracic and abdominal segment [2]. Every segment is located in the corresponding anatomical zone – neck, thorax and abdomen. There are two sphincters along the esophagus, one is in the proximal end, and the other – in the distal, before the stomach. Both sphincters have a protective function. The first prevents penetration of air in the stomach, and the second – the movement of stomach content in the esophagus [3]. The normal passage of food, water and saliva through the esophagus can be impaired. Usually, that is caused by a pathological narrowing of the lumen of the esophagus – a condition called stricture. The stricture can cause difficulty swallowing solid foods, allowing the passage of liquids only, or to prevent passage of both liquids and solid particles [4].

The causes for stenosis of the distal part of the esophagus are different in their etiology: peptic stricture, corrosive esophagitis, eosinophilic esophagitis,

radiation esophagitis, esophageal tumors, infiltration by tumors of neighbouring structures, impaired innervation, and others [5]. One of the most common causes is a stricture developed after chronic gastro-esophageal reflux [6, 7]. Achalasia is a significantly uncommon reason for impairing of the normal esophageal function. Its incidence is about 1 of 100,000 people per year [8]. That disease develops after impairing of the normal function of the myenteric plexus and vagus nerve fibers, which innervate the sphincter located at the distal part of the esophagus. The etiology of that impaired innervation is still unclear. There are different theories discussed, such as autoimmune reason, viral, genetic predisposition and others [9, 10, 11]. Before achalasia gets diagnosed, other reasons have to be ruled out – such as tumor process, eosinophilic esophagitis and others. The diagnostic algorithm includes: first, performing of an endoscopy, and in cases of a normal endoscopic image it is obligatory to take a biopsy, to rule out eosinophilic esophagitis. After that, the motility of the esophagus gets examined, like manometry and/or timed barium esophagogram [12]. There are some different therapeutical approaches in managing achalasia: endoscopic pneumatic balloon dilatation; laparoscopic Heller myotomy; peroral endoscopic myotomy, and others [13]. Endoscopic pneumatic balloon dilatation is one of the main methods according to the recommendations of the American College of Gastroenterology [14]. During the procedure the patients are sedated. Lowering the pressure is needed if the lower esophageal sphincter is reached through tearing of the smooth-muscular fibers of the esophagus with the inflated balloon. The used balloons come in three sizes (30, 35 and 40 mm). The localization of each balloon is controlled under fluoroscopy [15]. To reach an optimal therapeutical effect, the procedure has to be performed in two steps. In the first step a 30-mm balloon is used, while on the second – a 35-mm one. It is necessary to ensure about two weeks' interval between the two procedures [16]. The usage of the 40-mm balloon dilatation is uncommon – only in cases with persistent complaints [17]. If the procedure is performed in those multiple steps, the perforation risk is about 1-2% per procedure [18]. Another rare complication of these manipulations is the intramural hematoma. The incidence according to the different studies is between 1.6 and 3% [19, 20].

This case demonstrated one of the rare complications of the endoscopic balloon dilatation of the esophagus. In addition, the hematoma itself gets complicated, with an overloading inflammatory process. Thank to the multidisciplinary collective work, that unfavora-

ble result of the procedure was diagnosed correctly and timely and adequate therapeutical approaches were taken for the quickest possible recovery.

CONCLUSION

This case presented a rare complication of one of the standard procedures in the therapy of achalasia. Post-procedure complaints in patients after balloon dilatation should not be neglected, while the development of the typical symptoms sometimes takes more time. The diagnostics and treatment sometimes require multidisciplinary approach and the usage of different visual examinations.

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