

LONG-TERM RESULTS OF TREATMENT OF ESOPHAGEAL BURNS IN CHILDREN

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Abstract

Burns of the esophagus with chemical compounds in children are the most common type of traumatic damage to the esophagus. Burns occur after ingestion of concentrated solutions of alkalis and acids. Most often, children aged 1 to 3 years suffer, who, by the oversight of adults, taste everything.

Keywords: burns, solutions, acids, children, esophagus, traumatic injury.

Introduction

According to the American Association of Toxicological Centers, in 2008 alone there were more than 1.6 million poisoning cases in children, and alkaline burns of the esophagus were recorded in 18-46% after the use of various household chemicals [1]. Comparing the results of their research with the results of American, Turkish and Egyptian clinics, Sakineh Fallahi et al., indicate a higher percentage of severely affected in developing countries.

In the treatment of chemical burns of the esophagus, an important role is played by the provision of emergency medical care immediately after taking an aggressive substance. In the treatment of cicatricial stenosis, various types of dilation therapy are used.

The purpose of the research: to study the structure of chemical burns of the esophagus in children.

Materials and methods. The observed 192 children underwent esophageal augmentation along the guide. In 135 (70.3%) children, recovery was noted, without the formation of esophageal stenosis, 41 (21.35%) children developed cicatricial narrowing of the esophagus. Complications with bougie were noted in 16 (8.33%) children (parents did not adhere to the treatment regimen). 35-45 years after the operation, 3 patients went to the clinic due to dysphagia and the presence of a fistula in the esophageal-intestinal anastomosis on the neck. During the examination, cancer was diagnosed. One of them had a jejunum on his chest below the esophageal-intestinal anastomosis, the other had a gastrostomy.

It was noted that when confirming a chemical burn, complaints of anxiety and hypersalivation prevailed (in 42.9% of cases) ($p < 0.05$), the absence of complaints was observed in 27.1% of cases. complaints about the child's anxiety and increased salivation in 53.5% of cases ($p < 0.05$). Poisoning with salt-forming agents (aggressiveness of "moderate" degree) was manifested by anxiety, increased salivation, pain in the oropharynx and abdomen in 22.3%. When exposed to substances with a "high" degree of aggressiveness (dehydrators and corrosive substances), combined symptoms prevailed in 70.3% ($p < 0.05$). All patients remained relatively satisfactory. At the same time, periodically there was an increase in his peristalsis, local spasms and edema, short-term retention of food in the expanded sinuous loops of the intestine and their slow emptying into the stomach, as well as diarrhea.

All the patients did their homework and light work, but the cosmetic effect of the operation always caused a depressed mood. To restore the patency of the esophagus, we used the following instrumental methods: esophageal augmentation and dilation. In order to influence the stenosis tissues, methods of endoscopic cleavage with glucocorticosteroids and endoscopic dissection of scar tissue were used. All these methods assume the absence of surgical intervention on the esophagus. Esophageal augmentation is the most common method of treating esophageal strictures. We used bougie under direct esophagoscopy along the guide.

Morphological changes in the esophagus depend on the depth of damage. It is generally accepted to distinguish three degrees of chemical burns. The first degree (mild) is noted with damage to the surface layers of the epithelium and is characterized by desquamative esophagitis. In this case, there is only hyperemia and

swelling of the mucous membrane to a greater or lesser extent. There are no fibrinous overlays on the mucous membrane. The second degree (moderate) is characterized by damage to the mucous membrane and partially submucosal layer. There is pronounced edema, fibrinous deposits covering necrosis of the epithelial lining of the mucous membrane.

The third degree (severe) is characterized by damage to all layers of the esophagus. Necrosis also engulfs the muscle wall, edema can spread to the paraesophageal tissue. Deeper (than with second-degree burns) ulcers are covered with dense fibrinous layers. With such degrees of burns, complications may develop - perforation of the esophagus, mediastinitis and pleurisy.

With fresh burns of the esophagus, there are four stages:

- 1) hyperemia and swelling of the mucous membrane;
- 2) ulcers, both superficial and deep;
- 3) granulation;
- 4) scarring.

With first-degree burns, there is only one stage. Within 7-10 days, acute inflammatory changes subside, the epithelium is restored; scarring and narrowing does not occur. Second-degree burns are characterized by two stages. Starting from the 2nd week, superficial ulceration and erosion of the esophageal mucosa are cleared of fibrin deposits, and by the end of the 3rd week, the epithelial layer is completely restored. Only in isolated cases, the formation of snowy surface scars that do not narrow the lumen of the esophagus is possible.

With third-degree burns, all stages are observed. Unlike second-degree burns, the cleansing of the bottom of deep ulcers is delayed and, starting from the 3rd week, the ulcers begin to fill with granulations. At first, the granulations are lush, loose, bleed easily, from the 4th-5th week they begin to be replaced by connective tissue. The timing of scarring has individual characteristics, but in most cases, scars are formed by the 6th-8th week. Sometimes the scarring process is delayed for 3-4 months.

Research results and their discussion. Experimental and clinical studies have shown the high efficacy of a medicinal mixture based on a regenerator polymer in the treatment of severe chemical burns of the esophagus in children. In a

comparative assessment of the results of treatment of chemical burns in the experiment and clinic, a significant acceleration of regeneration processes was noted when using a new drug mixture based on a regenerator polymer in relation to a fat-hormone mixture. When using medicinal mixtures in the treatment of chemical burns of the esophagus of II-III degree, it was possible to avoid the formation of cicatricial stenosis in 85.5% of children, and in 32 children treated with a new composition of the mixture based on reenconter, stenosis occurred only in one case, and in the remaining 31 (96.9%) the child recovered.

The most formidable complication of conservative treatment of post-burn cicatricial stenosis of the esophagus is its perforation or rupture with the development of mediastinitis. In case of esophageal perforation, emergency dissection of the esophagus with gastrostomy and cervical esophagostomy is the operation of choice. PRSP treatment by endoscopic augmentation and dilation should not be carried out for more than two years. Shunting esophagocoloplasty is the surgery of choice for patients.

The dynamics of the endoscopic picture in the treatment of chemical burns of the esophagus of II - III degree in children with a new mixture based on a polymer reconstructor showed a faster decrease in the inflammatory process of the damaged organ and acceleration of epithelization of the burn surface.

Where cicatricial stenosis of the esophagus is formed, which does not respond to conservative methods of treatment (14 patients), the method of indirect augmentation was effectively used after the imposition of a gastrostomy according to Witzel-Yudin-Ternovsky in combination with the use of medicinal mixtures.

The augmentation of the esophagus by a metal guide wire with a hollow elastic bougie was developed and introduced into surgical practice in 1965. Bugirovanie on a guide wire is widely used in Russia, especially if the procedure is carried out for the first time. The technique consists in gently lowering the hollow bougie through the structure along a metal string passed into the stomach under X-ray control.

Burns of the esophagus in children occur due to accidental ingestion of caustic chemicals that are stored in places accessible to the child. If poisoning occurs more often in adults due to deliberate ingestion of a large amount of a caustic chemical, then local changes in the oral cavity, pharynx and esophagus prevail in children. All caustic liquids have an unpleasant taste, so children swallow a small amount, and the combination of burn and poisoning is quite rare.

Chemical burns in children can be caused by caustic soda (caustic soda or substances containing it, such as stationery glue); acetic essence, ammonia, technical acids (sulfuric, hydrochloric, nitric acids, as well as battery fluid); potassium permanganate crystals, etc.

The depth and severity of the esophageal burn depend on the concentration, nature of the chemical, its amount and time of contact with the mucous membrane. The last two factors determine the degree of esophageal burn. When the esophagus is damaged by acids having a coagulating effect, water is absorbed from the tissues with the formation of coagulation necrosis. The resulting scab prevents further penetration of acid deep into the tissues. The depth of the lesion depends mainly on the concentration and time of exposure to acid. When taking a significant amount of acids, especially inorganic ones, a burn of the stomach wall is possible, since, getting into the stomach, the concentrated acid is not neutralized. We have observed cases of perforation and scarring in the stomach when taking technical acids.

The metal conductor prevents the tip of the bougie from deflecting to the side, which reduces the likelihood of perforation of the esophageal wall and bleeding. In 89% of cases, this method allows you to expand the esophagus. Modern hollow thermoplastic boughs of various manufacturers are equipped with slippery and ultra-slippery guide wires with atraumatic ends, which reduce the percentage of unsuccessful procedures for inserting the guide wire outside the stricture site and generally reduce the number of palliative operations.

Evaluation of the stricture zone and the esophagus immediately after the bougie session allows us to consider the bougie string with endoscopic control safe in 98.9% of cases, while the manipulation does not require X-ray control and has a minimal complication rate. to create and widely implement the balloon dilation method for the prevention and treatment of PRSP. There are pneumatic and hydrodilation of the balloon depending on the aggregate state of the substance used to create compression in the balloon.

When performing balloon dilation, 88.5% of patients had a good effect, and the remaining 11.5% had a satisfactory effect; no complications and unsatisfactory results were noted. The preventive effectiveness of balloon dilation, according to various authors, ranges from 11.6 to 96.15%. According to E.A. Godzilla et al. (2013), balloon dilation is inferior to bougie, since it is effective only with short cicatricial strictures, ineffective with rigid strictures, requires exposure to a balloon in the esophagus, but is recommended for pyroplasm and scar strictures of colorectal

anastomoses. Stenting is a modern trend in the treatment of PRSP, however, its effectiveness is evaluated by the authors in different ways and is limited to a small number of observations. The high frequency of severe complications (exacerbation of esophagitis, bed sore ulcer with perforation, bleeding) prevents the development of this method. With the advent of new self-expanding metal esophageal stents in the early 1990s, because they are easier and safer to use, the possibilities of stenting have expanded.

Conclusions

Thus, clinical and experimental studies using self-expanding stents partially or completely covered with various materials have shown a decrease in dysphagia in 48-100% of patients with PRSP, as well as a decrease in the likelihood of esophageal bed sores and periesophageal reaction. Metal (nitinol) stents, absorbable stents, polydioxanone and silicone stents are most widely used. The stents installed in the esophagus exert continuous, uniform and dosed pressure on granulations and young connective tissue, thereby preventing the development of coarse fibrous tissue that narrows the lumen. A.V. Klimashevich (2014) indicates an increase in good long-term results of PRSP treatment by stenting by 35.9% compared with bougie and a decrease in unsatisfactory results by 27.1%.

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