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Analysis of the Results of Treatment of Patients with Gastrointestinal Bleeding Using Endoscopic and Surgical Methods of Hemostasis

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Abstract Analysis of the treatment results in patients with gastrointestinal bleeding with the use of endoscopic and surgical methods of hemostasis. **Methods.** Analysis of the treatment results in 421 patients with acute gastrointestinal bleeding from the urgent surgical department of Bukhara branch of the Republican cientific Center for Emergency Medical Care. **Results.** Endoscopic methods of hemostasis in bleeding from the upper gastrointestinal tract (argon plasma coagulation, combined prolonged infiltration hemostasis with the use of 6% solution of polyglucin with mafusol, irrigation with the solution «Hemolab», ligation of the esophageal veins and Danis stent implantation) were applied to 404 patients. All patients simultaneously received conservative treatment. When using the methods of endoscopic hemostasis mentioned above in patients with bleeding from upper gastrointestinal tract the efficiency was achieved in 87.9% of cases. It was the highest when using combined endoscopic methods. Recurrent acute bleeding was diagnosed in 30 (7.1%) cases. Majority of the patients with recurrent bleeding suffered from gastric ulcer and/or duodenal ulcer (21 patients). In all 30 patients with recurrent bleeding surgical intervention with the author's technique was performed. **Conclusion**. The efficacy of endoscopic methods of hemostasis in bleeding from the upper gastrointestinal tract, especially their combined use, was revealed; differentiated approach to the use of endoscopic and surgical techniques of hemostasis depending on the source of bleeding and its intensity is required.

Keywords Upper gastrointestinal tract, Bleeding, Endoscopic hemostasis, Surgical treatment, Conservative therapy

1. Introduction

One of the urgent problems of practical health care is acute gastrointestinal bleeding that requires emergency surgical care. Gastrointestinal bleeding is not only a public health problem, but it also remains an economic problem. Thus, in the United States, the cost of treating patients with bleeding ulcers is more than $2 billion per year [26]. Despite the achievements of modern clinical surgery, endoscopic methods of diagnosis and treatment, anesthesiology and resuscitation, mortality rates in this pathology remain high: overall - up to 15%, postoperative - up to 35%, and according to individual authors up to 55% or more in older age groups. groups [5,10,13,18,25]. The introduction of modern methods of endoscopic hemostasis in the last decade has improved the results of treatment of acute bleeding from the upper digestive tract [6,15,19,25,27]. More than half of the cases of bleeding from the upper gastrointestinal tract due to ulcerative lesions of the stomach [2,9,16,21]. An urgent problem in emergency surgery is gastric cancer complicated by gastric bleeding [14]. According to some authors, the incidence of gastrointestinal bleeding reaches 60 per 100,000 population [22]. Patients in most cases (68%) are elderly and senile people [2,7,8,11,12,23,24], 58–93.5% of them have concomitant pathology (one or more), which is significantly worsens the prognosis in acute gastrointestinal bleeding [2,8]. One of the reasons for the high mortality rate is the late hospitalization of patients. Topical diagnosis occupies a special place in the problem of gastrointestinal bleeding, which presents significant difficulties and is one of the main reasons for untimely radical treatment. The question of choosing a rational surgical tactics in each specific case remains difficult [1,4,19,20].

The Aim of the Study was to analyze the results of treatment of patients with gastrointestinal bleeding using endoscopic and surgical methods of hemostasis.

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2. Methods

The analysis of the results of treatment of 421 patients with acute gastrointestinal bleeding, who were treated in the

emergency surgical department of the Bukhara branch of the RRCEM from 2017-2020, was carried out.

3. Results

Endoscopic methods of hemostasis of bleeding from the upper gastrointestinal tract (argon plasma coagulation, combined prolonged infiltration hemostasis with the use of a 6% solution of polyglucin with mafusol, irrigation with a solution of "Hemostab", ligation of the veins of the esophagus and installation of a Danish stent) were used in 404 patients. All 421 patients also received conservative therapy in parallel. When using the above methods of endoscopic hemostasis in patients with bleeding from the upper digestive tract, efficiency was achieved in 87.9% of cases. It was highest with the combined use of various endoscopic methods. Recurrent acute bleeding was diagnosed in 30 (7.1%) patients. Most patients with recurrent bleeding suffered from gastric and/or duodenal ulcers (21 patients). All 30 patients with recurrent bleeding underwent surgical intervention using the author's technique.

The mean age was 57±0.9 years (19–87 years). There were 251 (59.6%) men and 170 (40.4%) women. Almost 41% of patients had comorbidities, most often cardiovascular. Gastric ulcer was the cause of acute bleeding in 69 (16.4%) patients, duodenal ulcer - in 159 (37.8%), Mallory-Weiss syndrome - in 84 (19.9%), erosive-hemorrhagic lesions of the upper sections of the gastrointestinal tract - in 45 (10.7%) patients, varicose veins of the esophagus and stomach - in 37 (8.8%), tumor lesions of the stomach - in 27 (6.4%) patients. The patient's condition and the severity of blood loss were determined according to the classification of A.I. Gorbashko (1982) [3]. In our study, mild blood loss was found in 53% of patients, moderate in 32%, and severe in 15% of patients. For examination of the upper gastrointestinal tract, fiber and video endoscopes from Olympus (Japan) were used. With fibroesophagogastroduodenoscopy, the source of bleeding and the stability of hemostasis were determined according to the classification of J.A. Forrest et al. (1974). In our study, patients were distributed as follows: - Ia (arterial, jet) - 13 (3.2%) patients; - IV (drip, diffuse; stopped bleeding) - 57 (13.5%); – IIa (thrombosed artery) — 114 (27.1%); – IIc (fixed clot) — 160 (37.9%); – IIc (small thrombosed vessels) — 63 (14.9%); - III (ulcer under the "white" thrombus) - 14 (3.4%) patients. Based on the data obtained, we determined the treatment tactics individually for each patient. After establishing the source of bleeding and appropriate preparation, endoscopic or surgical methods of hemostasis were used, followed by conservative therapy. For argon plasma coagulation, we used devices from Fotek EA-141 and EA-142 (Yekaterinburg) and KLS martin maxium (Germany). The method of combined prolonged infiltration hemostasis was performed using a 6% solution of polyglucin with mafusol at a 1:1 dilution using an ERBE endoscopic injection needle and probes for argon plasma coagulation. Irrigation with Hemostab solution was carried out through an endoscopic catheter, in the amount of 2-3 ml for each case of bleeding. Esophageal vein ligation was performed with Boston Scientific ligatures (USA). To stop bleeding from varicose veins of the esophagus, the ELLA Danish stent was used, followed by its endoscopic extraction within 7 days. Conservative treatment included infusion, hemostatic, antisecretory and eradication therapy. Infusion therapy was started with infusions of colloid-crystalloid solutions to compensate for the deficit in circulating blood volume and stabilize hemodynamics with simultaneous correction of hemocoagulation disorders by transfusion of fresh frozen plasma. When carrying out substitution therapy, we were guided by the provisions given in the algorithm for managing patients with gastroduodenal bleeding by V.K. Gostishchev [4]. During substitution therapy, the parameters of hemodynamics and infusion load were carefully controlled due to the unpredictability of the body's response to blood loss and its replacement. In the course of conservative therapy, fibrogastroduodenoscopy was performed for the purpose of dynamic control. Argon plasma coagulation was used in 197 cases in patients with gastric ulcer, duodenal ulcer and Mallory-Weiss syndrome. Endoscopic irrigation with Hemostab solution was performed in 139 cases in patients with erosive-hemorrhagic lesions of the upper gastrointestinal tract, as well as with Mallory's syndrome.

When using the above methods of endoscopic hemostasis in patients with bleeding from the upper digestive tract, efficiency was achieved in 87.9% of cases. It was highest with the combined use of various endoscopic methods. According to our study, recurrence of acute bleeding was diagnosed in 30 (7.1%) patients. It should be noted that the majority of patients with recurrent bleeding were with gastric and duodenal ulcers (21 patients). All 30 patients with recurrent bleeding underwent surgical interventions. 9 patients died.

With gastric bleeding in patients in serious condition, with inoperable tumors, only palliative operations are justified, such as suturing a bleeding vessel after gastrotomy, excision of an ulcer, ligation of the main vessels throughout, etc. After such operations, our patients developed recurrent bleeding. In order to stop and prevent recurrence of gastric bleeding and necrosis of the gastric wall, we proposed a method for the surgical treatment of gastric bleeding [17].

The goals are achieved by ligating the branches of the small and large perigastric arches in the area of the source of bleeding and immediately adjacent areas under the control of blood pressure in the intramural vessels - until it is firmly established at the level of 40–45 mm Hg. at the edge of the bleeding site. The method is carried out as follows. Prior to the start of laparotomy, a fibrogastroscope is inserted into the stomach, through which blood is removed from the stomach, clots are washed, and a bleeding site is established. Then, under general anesthesia, through a mini-incision in the transmitted light of a fibrogastroscope, the surgeon fixes the position of the source of bleeding and the intramural vessels associated with it.

Reveal perigastric arches - small, large and vessels

directed from them to the anterior and posterior walls of the stomach. Bandage direct vessels in the projection of the source of bleeding (tumors, ulcers). In the course of ligation, the method of angiotensometry determines the blood pressure in the vessels of the submucosal layer, in the sections adjacent to the bleeding focus from the side of the lesser and greater curvature. The ligation of the vessels going to the tumor is continued until the arterial pressure in the intramural vessels is established in the indicated sections at the level of 40–45 mm Hg. Depending on the position and length of the focus of bleeding, the pressure is bandaged in the areas of the stomach wall adjacent to the pathological focus and thereby stop bleeding from tumors, ulcers, erosions of the stomach.

When the pressure in the intramural vessels is below 40–45 mm Hg. destructive changes in the gastric wall develop. At pressures above 40–45 mm Hg. does not provide a reliable stop bleeding. The proposed method is characterized by simplicity, low trauma, asepsis of the operation, since the lumen of the stomach is not opened. The method can be the operation of choice for an inoperable tumor of the stomach, as well as for gastric bleeding in elderly patients with severe concomitant diseases, when more extensive operations are accompanied by an increased risk.

4. Conclusions

1. The effectiveness of endoscopic methods of hemostasis in bleeding from the upper gastrointestinal tract was revealed. It has been established that with the combined use of endoscopic methods of hemostasis, the efficiency increases significantly.

2. A differentiated approach is needed in the use of endoscopic and surgical methods of hemostasis, depending on the type of source of bleeding and its intensity.

3. Treatment for patients with gastrointestinal bleeding should be comprehensive, taking into account the individual characteristics of a particular patient, as well as comorbidities.

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