Abstract: Gastrointestinal hemorrhage remains an important problem for all emergency departments. Endoscopy is the primary diagnostic and therapeutic tool for gastrointestinal bleeding. The performance of endoscopic therapy depends on findings of stigmata of recent hemorrhage. Endoscopic therapies include injection using sclerosing agents, mechanical and coagulation hemostasis. Endoscopic hemostasis by an experienced endoscopist reduces bleeding, the risk of hemorrhage recurrence and surgical recommendation.

Keywords: gastrointestinal hemorrhage, emergency, endoscopic hemostasis

Rezumat: Hemoragia gastrointestinală este o problemă importantă pentru departamentele de urgență. Endoscopia este principala metodă de diagnostic și tratament în hemoragia gastrointestinală. Performanța terapiei endoscopice depinde de localizarea semnelor de hemoragie recentă. Terapia endoscopică include: tehnică de injectare a agenților sclerozanți, hemostază mecanică și tehnică de coagulare. Hemostază endoscopică reduce sângerarea, riscul de hemoragie recurentă și recomandarea de intervenție chirurgicală.

Endoscopic evaluation and haemostatic therapy in gastrointestinal hemorrhage

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Keywords: gastrointestinal hemorrhage, emergency, endoscopic hemostasis

Cuvinte cheie: hemostaza endoscopică, hemoragia gastrointestinală, urgență majoră, hemostază endoscopică

Abstract: Gastrointestinal hemorrhage is considered by specialists as a major emergency and an important problem of diagnosis and therapy in emergency departments. The incidence of severe gastrointestinal bleeding form is insufficient documented in the pediatric population. The reported incidence, in intensive care departments is estimated between 6.4-25% in cases of upper gastrointestinal bleeding and 0.3% for lower gastrointestinal bleeding.(1,2) In the past two decades, modern techniques of diagnosis and endoscopic treatment available at pediatric age, significantly improved the chance of diagnosis and evolution in gastrointestinal bleeding. In intensive care unit, the first step in the management of active gastrointestinal bleeding should be done immediately and includes clinical and pre-endoscopic assessment.(2,3) The Blatchford score takes into account clinical and biochemical risk markers: elevated blood urea nitrogen, decreased hemoglobin, decrease systolic blood pressure, raised pulse rate, the presence of melena or syncope and evidence of hepatic or cardiac disease, can be used to determine the required level of care on admission and to identify the patients who need urgent treatment.(1,4)

The endoscopic Forrest classification in upper gastrointestinal bleeding allows the assessment of bleeding severity, type of bleeding, the risk of rebleeding and recommend endoscopic therapeutic intervention: I – active bleeding; IA – jet bleeding, throbbing, pressure; IB – continuous trickle of blood from an injury; IC – bleeding “in cloth” capillary type; II – stigmata of recent bleeding: IIA –unbleeding visible vessel; IIB – adherent clot; IIC – black core lesion; III – no stigmata of recent bleeding.(1) Recommendations for therapeutic endoscopic hemostasis in gastrointestinal bleeding are: bleeding active ulcer and Forrest endoscopic parameters - I A, IB, stigmata of recent bleeding Forrest IIA , adherent clot injury (sentinel clot) - Forrest IIB with high risk of re-bleeding, appreciated to 50%, esophageal varices, vascular anomalies, colonic mucosal bleeding ulcer, colonic angiomatosis, hemorrhagic polyps, adherent clot at a diverticulum ulcer.(3,4) North American Society of Pediatric Gastroenterology, Hepatology and Nutrition claimed performing therapeutic endoscopy in gastrointestinal bleeding in the following circumstances: active bleeding, persistent and recurrent and unresponsive to medical therapy; important bleeding with hemodynamic deterioration; variceal bleeding; evaluation of unexplained gastrointestinal bleeding; treatment of the vascular anomalies bleeding, ulcers or areas after polypectomy. Diffuse hemorrhagic lesions in the gastric, duodenal or colonic mucosa, are not an indication for endoscopic haemostatic intervention.(1,4) In practice, experts recommend the following types of therapeutic endoscopic intervention in acute gastrointestinal hemorrhage:

1. Therapeutic hemostatic endoscopy by injection technique is used for both variceal and non-variceal bleeding. Hemostasis agents used are:
   - Vasoconstrictor agents - Ephinephrine 1/10.000 can be injected directly into the submucosa or at the base of an ulcer induce local vasoconstriction, platelet aggregation, mechanical tamponade and reduce the risk of rebleeding by 15%.(1,5,6)
   - Sclerosing agents – absolute ethanol 98%, hypertonic saline solution, polidocanol 1%, thrombin 100 UI induce hemostasis causing local thrombosis above the vessel who bleeds. Sclerosing agents are now used to treat bleeding caused by esophageal varices, peptic ulcer and Dieulafoy lesions.(1,6,7) Sclerosing agents with paravariceal and intravariceal injection have comparable efficiency. Sclerotherapy is recommended in variceal hemorrhage with significant efficiency compared with banding veins. Sclerosing agents for non-varicel bleeding are: hypertonic saline solution 3.6% or 7.2% and epinephrine 1/20.000 combination, epinephrine 1/1.000 1ml with 9 ml normal saline, epinephrine 1/10.000 5-10 ml fallowed by 5 ml 1% polidocanol or thrombin 100 UI in 3 ml normal saline. The American Society for Gastrointestinal Endoscopy suggests using a quarter to half of the recommended adult dosing in children < 12 years of age motivated by possible
complications - ulceration, esophageal strictures, fistulas, mediastinitis and bacteremia. American Association for Gastroenterology and Endoscopy recommends antibiotic prophylaxis.

- Tissue adhesives - fibrin glues are fully resorbed and significantly reduce the rate of rebleeding.(1,6,7,8,9)

2. Mechanical techniques of hemostasis include:

- Elastic ligatures / endoscopic banding may be used for esophageal variceal bleeding, Dieulafoy lesions, Mallory Weiss bleeding, gastric and duodenal ulcers, angiectasias, peptic polyps, bleeding hemorrhoids. Endoscopic banding is recommended in prevention of recurrent bleeding, ulceration, stricture formation and bacteremia. Endoscopic banding is recommended as a method of hemostasis in patients of pediatric age.(9,10,11)

- Hemostatic Clips have indications to achieve hemostasis include variceal bleeding, ulcer diverticular bleeding, intractable bleeding after mucosal biopsy and bleeding at the site of polypectomy. Endoscopic hemostatic clips induce direct tamping and are recommended for pediatric patients.

- Endoloops are utilized primarily for the management of potential or actual postpolypectomy hemorrhage.(9,10,12,13)

3. Electrocoagulation monopolar / bipolar and multipolar method and thermocoagulation method are recommended in colonic angiodysplasia, hemorrhagic protocollitis after radiation therapy.

4. Laser photoocoagulation NdYAG is another modality occasionally used to achieve endoscopic hemostasis. Contact or non-contact applications are possible in colonoscopy and small bowel enteroscopy for congenital vascular lesions (hereditary hemorrhagic telangiectasia, angiodysplasias, arteriovenous malformations.

5. Argon plasma coagulation (APC) is a non-contact method of coagulation in which current is transmitted in arcs of electricity through an ionized gas (argon). Therapy is performed for hemostasis of superficial vascular ectasias, Dieulafoy lesions, peptic ulcers and postpolypectomy bleeding. Coagulation methods have comparable efficacy with one another for hemostasis, reduce rebleeding, transfusion requirement and need for emergency surgery.(10,11,13)

Diagnostiс and therapeutic assessment stages in gastrointestinal hemorrhage comprise: 1. The clinical criteria for classification according of severity and potential risk: assessment of hemodynamic status and initiating emergency resuscitation and stabilization measures; patients are risk-stratified based on features such as hemodynamic status, comorbidities, age, and laboratory tests; decision and recommendation for upper gastrointestinal endoscopy for diagnosis; 2. Treatment prior to endoscopy aims to improve clinical parameters and reduce the risk of bleeding: inhibitor proton pump (IPP) with 80 mg IV bolus followed by maintaining continuous infusion of 8 mg / h; erythromycin 250 mg / IV for 30 – 90 minutes; 3. Stage intended for diagnostic and therapeutic digestive endoscopy: upper endoscopy is generally performed within 24 hours of admission after hemodynamic stabilization; endoscopic evaluation using Forrest classification parameters; recommendation for endoscopic hemostasis and accurate technique of intervention; patients with flat spots or clean-based ulcers do not require endoscopic therapy or intensive PPI therapy; 4. The recommended treatment after the endoscopic hemostasis: PPI 80 mg IV bolus followed by maintaining continuous infusion of 8 mg / h for 72 hours; patients with ulcers that have flat pigmented spots or clean bases can receive standard PPI therapy (oral PPI once daily).

Routine second-look endoscopy, after initial endoscopic hemostatic therapy, is not recommended. Second-look endoscopy should be performed in patients with clinical evidence of recurrent bleeding and hemostatic therapy should be applied in those with higher risk stigma of hemorrhage (Forrest I and IIA).(14,15,16) Endoscopic therapy is well accepted as the first-line treatment in most management algorithms. The management of gastrointestinal bleeding requires a multidisciplinary approach, cooperation among gastroenterologists who are skilled in endoscopic hemostasis, specialist trained in intensive care and surgery.

REFERENCES