Diagnostic and Management in Digestive Hemorrhages in Children

Prof. Dr. Marin Burlea
University of Medicine and Pharmacy “Gr. T. Popa”, Iasi, Romania
• **Digestive hemorrhage** is loss of blood from the digestive system.

• They are considered to be externalized bleeding as blood flows into a hollow organ of the digestive tract, whether the esophagus, stomach, or intestine and then exteriorized through **haematemesis, melaena, rectal haemorrhage**.
Bleeding can be divided according to the place and duodeno-jejunal angle ratio (Treitz ligament) in:

- **Upper gastrointestinal bleeding** (upper angle)
  - esophagus, stomach and duodenum

- **Lower gastrointestinal bleeding** (low angle)
  - small intestine, colon, rectum and anus
In the case of a child suffering from digestive hemorrhage, we shall establish:

- the source
- the frequency
- the volume
- duration of the bleeding
- the presence of other gastrointestinal symptoms (diarrhea, abdominal pains, constipation, vomit)
- the presence of the systemic symptoms (fever, rash, dizziness, whiteness, palpitations, cold extremities).
In stable patients, the medical history shall comprise details regarding the personal pathologic clinical record:

- gastrointestinal diseases (adenoids, ulcers, colitis)
- hepatic diseases
- portal hypertension
- hemorrhagic diatheses
- reactions to anesthesia
- medication (AINS, warfarin, the recent use of antibiotics)
- recent travels
- contact with other ill persons or contact with animals
At the physical examination we can notice the presence of:

- the tegument whiteness
- jaundice
- ecchymoses
- telangiectasias
- rash
- dehydration
- different bleedings at the level of the cephalic extremity.

At cardiovascular level one shall establish the blood pressure, the cardiac output, the capillary refill.

Stomach palpation can highlight a painful stomach or a hepatosplenomegaly.

At perineum level → fissures, fistulae, indurations, external hemorrhoids or abnormalities of the vessels.
Over the initial assessment, two vein lines are chosen.

According to the fluids needed for the resuscitation, we shall quickly administer (30-60 minutes) physiologic serum 10-20 ml/kg.

If the bleeding is rapid, this volume can require the replacement with eritrocytary mass and coagulation factors.

A hemoglobin level which exceeds 8 g/dl is usually enough.

The endoscopic treatment in a hemodynamic instable patient is not recommended.
Interventional endoscopy:
- set of endoscopic techniques
- it cures different aspects of gastrointestinal pathology
- the most frequent clinical expression (upper/lower digestive hemorrhage)

The child - different from the adult
- 1970 – endoscopy revolutionary method
- After 1980 – TDE has imposed in pediatrics
- 24 years of DE pediatrics at Iași
- 23 years of therapeutic DE
Therapeutic digestive endoscopy (TDE)

**General outlines**
- Diagnostic is essential
- Direct visualization / retrovision
- Efficient and hypogastric therapeutic method

**Pediatric premiere**
Iași 1992

**Equipment**
- Flexible endoscope Ø 8-10mm
- Video recorder
- Lavage channel / suck – gastropump
- Appliance channel
- Instrumental accessories: needles, endoloops, biopsy forceps, Savary – Gillard bougies, electrocautery
• The children with anemia and positive Hemoccult testing, even in the absence of melena, hematochezia or hematemesis can require upper digestive endoscopy in order to establish the diagnostic.

• If a child is suspected of allergic or infectious colitis or colonic polyp, the colonoscopy represents the election examination (or the flexible sigmoidoscopy for the children suspected of allergic colitis).
Corrosive Esophagitis

- it is caused by accidental ingestion of caustic chemicals (acids or alkaline);
- It is the most common childhood esophagitis;
- it can complicate with esophageal stenosis or with upper digestive hemorrhage.
Esophageal varices

- determine upper digestive hemorrhage
- appear in liver disease (90% are caused by liver cirrhosis)
- there are two mechanisms for variceal rupture:
  - by erosion
  - as a result of sudden pressure changes
Edema of the mucous, nodular-antral congestion, chronic infection with *H. pylori*

Corporeal hypertrophic folds, nodular antral congestion
Complications of gastritis

HDS in lower esophagus, foreign body ingestion

Upper gastrointestinal bleeding in antral and corporeal region
Gastric and duodenal ulcers

Ulceration in antral and prepyloric region
Therapeutic intervention types for GI tract hemorrhages

1. Injection

2. Coagulation:
   - thermocoagulation,
   - electrocoagulation
   - argon plasma coagulation

3. Laser therapy (photocoagulation)

4. Endoscopic hemostatic devices (bands and clips)

5. Ligation
Hemorrhagic injuries treatment

Hemorrhagic injury:
- varicose and non varicose hemorrhage
- hemorrhagic ulcer.

Gastro duodenal ulcer hemorrhage assessment:
- ulcer bleeding at the basis – arterial bleeding
- ulcer bleeding from the edges – venous and capilar type
- recent bleeding – basis of ulcer covered with haematin, visible vessel, adherent clot, petechiae.

Hemorrhagic activity classification - Forrest criteria:
- Ia: active arterial bleeding in spurt
- Ib: active non arterial bleeding in a flow or drop manner
- II : bleeding is stopped at present, but there is an injury that shows bleeding (fresh clot, visible vessel)
- III: stopped bleeding without markers
Foreign body removal:

**Equipment:**
- *standard flexible endoscope* (preferable video endoscope)
- *accessories*: clips, retrieval basket, loops and forceps.
- *general anesthesia*, with orotracheal intubation.

-during 20 years of clinical experience there have been a no of 320 cases cured by using this method.
Foreign body removal:
Foreign body removal:
Polypectomy:

**Indications:**
- any kind of sessile or pedunculated polyp.

**Tools:**
- standard and therapeutic endoscope
- polypectomy loop
- diathermic power source
- grasping forceps for removing polyp
- forceps for *hot-biopsy*
- injection needle
- syringe with saline solution
- syringe with epinephrine 1/10000
- detachable loop
Polypectomy:

Polipectomy technique:

- it is the same regardless of the GI part
- it is seldom applied on the esophagus and stomach
Endoscopic resection of the pedunculated polyps:

- the polyp is spotted
- the injury - insertion spot is thoroughly examined
- the polypectomy loop is inserted through the biopsy channel
- the loop is placed over the polyp
- the polypectomy loop is maintained parallel to the wall, in the middle of the pedicle
- the loop is slowly compressed
Polypectomy:

**Polypectomy technique:**
- the polyp is pulled into the lumen
- the tent sign is reached
- electric current is not applied before resistance is noted
- we don’t mechanically cut the polyp
- electric current is applied after edema and whitening of the polyp is reached
- the polyp is mobilized inside the lumen while electrical current is applied
- the cut polyp falls and must be looked for and recovered
- polypectomy loop is used for removal
- if the polyp has a thick pedicle -1/10000 epinephrine solution is injected in the middle of it.
Polyps of the colon
polyps - duodenum
Endoscopic retrograde cholangiopancreatography

- the primary method for the diagnosis and treatment of many pancreatic and biliary diseases
- the most difficult and complex endoscopic procedure that requires special training
### Biliary indications:

- **diagnosis:**
  - choledocholithiasis,
  - choledoch cyst,
  - dilatated inter or extrahepatic biliary channels,
  - biliary stenosis,
  - neonatal cholestasis,
  - dismotility of the Oddi sphincter

- **therapeutic:**
  - calculus removal,
  - stenosis dilatation,
  - Stent placement,
  - sphincterotomy

### Pancreatic indications:

- **diagnosis:**
  - biliary pancreatitis,
  - persistent, recurrent or chronic acute pancreatitis, pancreatic trauma,

- **therapeutic:**
  - calculus removal,
  - stenosis dilatation,
  - sphincterotomy,
  - placement of pseudo-cyst drainage stent
Conclusions

• The digestive hemorrhage is an important and relatively frequent reason for the patients who present to the pediatric gastroenterologist.

• The causes vary from the false bleeding determined by the ingestion of certain food or from the simple bleeding from an anal fissure up to bleedings which endanger the life, such as the hemorrhage at the level of the esophageal varicose secondary to the chronic hepatic diseases and to the portal high blood pressure.

• With regard to the source, its diagnostic requires diligence and know-how in order to obtain the details needed for an accurate treatment.
Thank you!