

TREATMENT OF UPPER GASTROINTESTINAL HEMORRAGE (GIH)

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JUST A BIT OF STORY...

.Early 1970s transcatheter embolotherapy

.Mid 1980s endoscopy has a role of first-line hemostasis

CLINICAL SYMPTOMS

Hematemesis

Melena

Hematochezia

EPIDEMIOLOGY

Incidence of 50-100/ 100.000

Mortality of 10-14%

Rebleeding after initial arrest 10-20%

CAUSES: 10% variceal

50% peptic ulcer

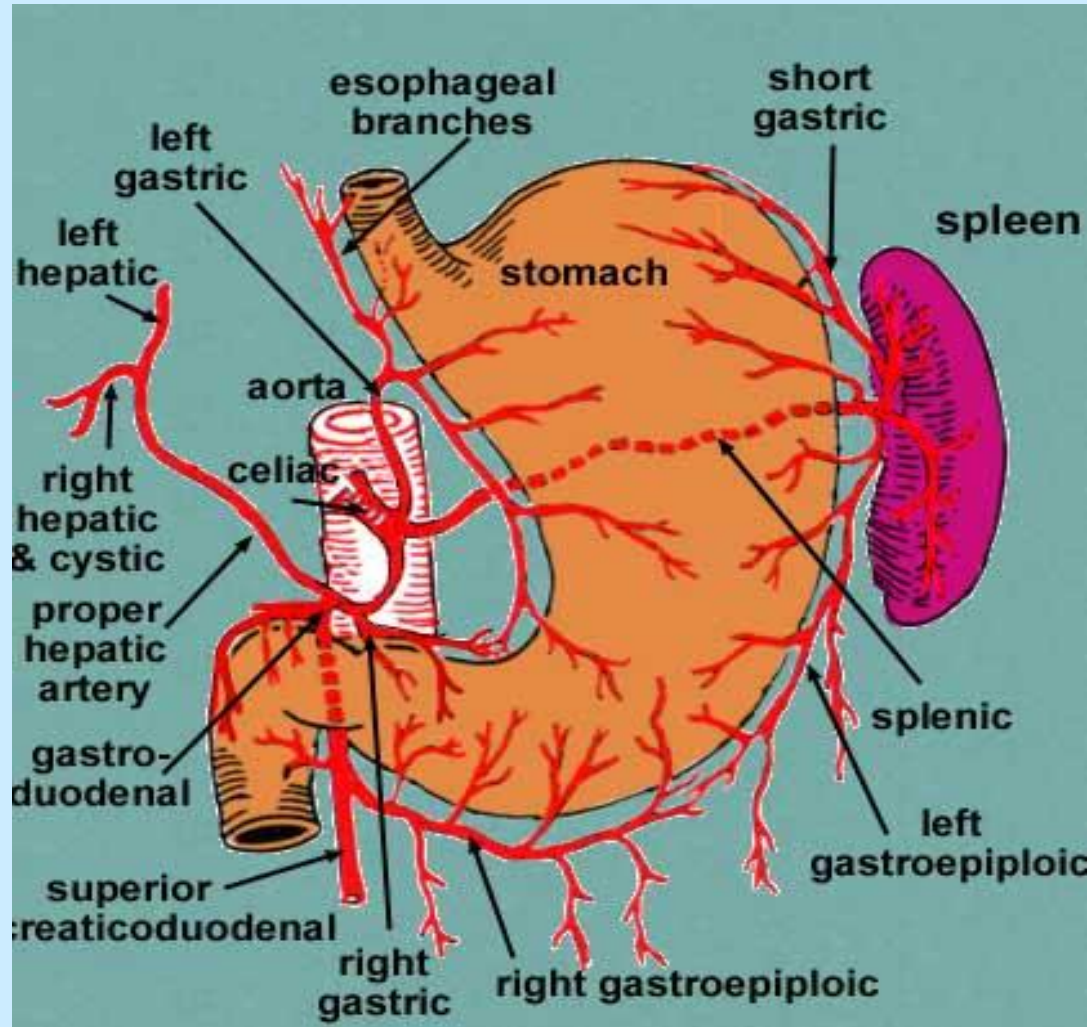
10-20% without a documented cause

other major etiologies: erosion,

mucosal inflammation,

neoplasm,

VASCULARISATION



ARTERIOGRAPHY vs SURGERY

Everybody says : my technique is the best!

Surgers: arteriography hardly plays a role in salvage of unmanageable upper GIH

Interventional radiologists: uncontrollable GIH should be an indication for arteriography and embolization



Decision making should be based on individual parameters

(age, cardiovascular risk, coagulation disorder)

OPTIMAL TIMING IN ARTERIOGRAPHY

Markers of active bleeding: fall in Hb and Hct blood levels,
necessity of high transfusions,
fall of systolic blood pressure
with tachicardia.

BUT

Not all always present



So **alertness** and **rapidity of decision making**

DIAGNOSTIC ARTERIOGRAPHY

- Local anesthesia. via a **transfemoral access** with Seldinger technique.
- Injection of iodinated non ionic iso-osmolar contrast medium into the celiac trunk and the SMA (gadolinium chelates suggested as a substitute).
- Using x-ray equipment recording of arterial, parenchymal and portal venous phases. The patient are asked to stop breathing and not to move . Bowel gas and peristaltis should be anticipate by the administration of butylhyoscine.
- Examination of images on the display to look for:
 - Contrast medium extravasation** —→site of vessels rupture during active bleeding
 - Detection of aneurysm** —→potential bleeding sources
 - Pooling of contrast medium** —→malignant or metastatic tumor

ALTERNATIVES

NUCLEAR MEDICINE

Technetium sulfur colloid: applicability to the active bleeding period.

Technetium labeled red blood cells: optimized to detect extremely rapid, intermittent and low-grade bleeding.

COMPUTER TOMOGRAPHY ANGIOGRAPHY (CTA)

high sensitivity for locating the bleeding site but discloses the nature of the lesion.

THERAPEUTIC ARTERIOGRAPHY

Induction of vasospasm + vasopressin :

physiological defences. Arteriolar constriction and bowel wall contraction

Embolization : minimally invasive treatment that occludes blood vessels or vascular channels malformation. Medications or embolic agents are placed into the vessel to stop bleeding.

RISKS

- ❖ Damage to the blood vessels
- ❖ Bleeding at the puncture site
- ❖ Infection even if an antibiotic has been given
- ❖ Allergic reaction
- ❖ Kidney damage

BENEFITS

- ❖ Non invasive
- ❖ Few complications
- ❖ Shortness of the hospital stay
- ❖ No surgical incision

BLIND „PROPHILACTIC” AND „EMPIRIC” EMBOLIZATION (1975)

No abnormalities are detected but prior identification of a lesion in the vascular territory.

Technical simplicity and safety.

Effectiveness not proved.

PARTICULATE EMBOLIZATION

Contrast extravasates and the bleeding branch is beyond the reach of superselective catheterization.

Injection of **non-calibrated polyvinyl alcohol particles (PVA)** kept as low as possible to avoid distal embolization causes plug formation.

Control arteriography necessary.

Palliative with structural abnormalities (vascular malformations, hypervascular tumors, vessel wall irregularities).

Disadvantage: overdosing of particulates can occlude collateral vessel causing irreversible ischemia

COIL EMBOLIZATION

SANDWICH TECHNIQUE

Large-caliber stainless steel (Gianturco coils) coated with strands of Dracon platinum microcoils compatible with microcatheters.

Microcoils are pushed by a flexible guidewire or by contrast medium injection into and out of the microcatheter in order to cause local mechanical obstruction of blood flow and promotion of thrombus formation.

Disadvantage and complications: flow may be restored if coil embolus is loose. Coil may perforate the vessel wall or provoke vasospasm.

GELFOAM EMBOLIZATION (1975)

Absorbable non-radiopaque non-permanent embolic agent consisting of dry gelatin, manually cut in fragments, cubes, plugs or pledgets, sized according to the diameter of the vessel to occlude.

Under fluoroscopic control, the Gelfoam pledget is expelled by force into the target vessel. It causes **mechanical proximal occlusion with thrombus formation**.

Control angiogram necessary after each injection.

Disadvantage and complications: restoring of flow after resorption of the gelatin; it may cause distal embolization and ischemia.

Injection of Gelfoam from a distance if the bleeding point cannot be reached.

Only temporary.

GLUE EMBOLIZATION

Histoacryl: fast and efficient non-resorbable non-radiopaque embolic material based on polymerization of the acrylate monomer.

Glue might be used for lesions out of range for a Sandwich technique occlusion, but the use in the GI tract is scarce because of an increased risk for acute bowel infarction and chronic stenotic complications.

There's a **rapid stenotic polymerization after contact with ions in blood** to create an elastic and adherent plug.

Disadvantage and complications: many factors (blood flow, caliber of vessel, velocity of the injection) control time and place of polymerization.

The microcatheter may be glued in the embolus.

Ischemia and infarction.

OUTCOME

Primary clinical success (cessation of bleeding within 30days): 58-78%

Secondary rescue by a combination of interventions: 90%

Future under investigation...

Adjunctive prokinetics.

Hemoclipping and cryotherapy.

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GRAZIE PER L'ATTENZIONE

