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Updates in Critical Care Management of Upper Gastrointestinal Bleeding

An essay

Submitted for Partial Fulfillment of Master Degree in Intensive Care Medicine

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كلية الطب
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الجديد في الرعاية الحرجة لمريض نزيف الجهاز الهضمي العلوي

رسالة

توطئة للحصول على درجة الماجستير في تخصص العناية المركزة

مقدمة من

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Contents

List of abbreviations

(ACS)	Abdominal Compartment Syndrome
(APTT)	Activated Partial Thromboplastin Time
(ARDS)	Acute Respiratory Distress Syndrome
(ASA)	Acetyl Salicylic Acid
(ASGE)	American Society of Gastrointestinal Endoscopy
(ATLS)	Advanced Trauma Life Support
(BUN)	Blood Urea Nitrogen
(CagA)	Cytotoxin Associated Gene
(CDAD)	Clostridium Difficile Associated Diarrhea
(Child)	Child-Turcotte-Pugh Classification
(COX-I)	Cyclooxygenase-I
(COX-II)	Cyclooxygenase-II
(CT)	Computed Tomography
(CVP)	Central Venous Pressure
(DIC)	Disseminated Intravascular Coagulation.
(EGD)	Esophagogastroduodenoscopy
(EIS)	Endoscopic Injection Sclerotherapy
(EVL)	Endoscopic Variceal Ligation
(FFP)	Fresh Frozen Plasma
(GBS)	Glasgow Blatchford Score
(GCS)	Glasgow Coma Scale

(GERD)	Gastro-Esophageal Reflux Disease
(GI)	Gastrointestinal
(GOV)	Gastro-Oesophageal Varices
(H. pylori)	Helicobacter Pylori
(H+/K+-	Hydrogen-Potassium Adenosine
ATPase)	Triphosphatease
(H2RA)	H2-Receptor Antagonists
(HCV)	Hepatitis C Virus
(HHT)	Hereditary Hemorrhagic Telangiectasia
(HIV)	Human Immunodeficiency Virus
(HRS)	Hepatorenal Syndrome
(HVPG)	Hepatic Venous Pressure Gradient
(ICU)	Intensive Care Unit
(IGV)	Isolated Gastric Varices
(INR)	International Normalized Ratio
(IV)	Intravenous
(LGIB)	Lower Gastrointestinal Bleeding
(MAP)	Mean Arterial Blood Pressure
(MCV)	Mean Corpuscular Volume
(MEN)-I	Multiple Endocrine Neoplasia
(MI)	Myocardial Infarction
(NG)	Nasogastric
(NO)	Nitric Oxide

(NSAIDs)	Nonsteroidal Anti-Inflammatory Drugs
(PG)	Prostaglandin
(PPIs)	Proton Pump Inhibitors
(PT)	Prothrombin Time
(PUB)	Peptic Ulcer Bleeding
(PUD)	Peptic Ulcer Disease
(RUQ)	Right Upper Quadrant
(SRH)	Stigmata of Recent Hemorrhage
(SRMD)	Stress-Related Mucosal Damage
(SSRIs)	Selective Serotonin Reuptake Inhibitors
(TIBC)	Total Iron Binding Capacity
(TIPS)	Transjugular Intrahepatic Portosystemic Shunt
(UFH)	Unfractionated Heparin
(UGIB)	Upper Gastrointestinal Bleeding
(UGIH)	Upper Gastrointestinal Hemorrhage
(VAP)	Ventilator Associated Pneumonia
(VEGF)	Vascular Endothelial Growth Factor
(ZES)	Zollinger–Ellison Syndrome

List of tables

List of figures

Introduction

Acute upper gastrointestinal hemorrhage (UGIH), which is defined as bleeding proximal to the ligament of Treitz, is a prevalent and clinically significant condition with important implications for health care costs worldwide***(Gralnek et al., 2008).***

Despite massive revolution in medical technologyand decreasing in the incidence, upper gastrointestinalbleeding (UGIB) is still the one of the leading causes of mortalityin emergency patients. This may be accountedto an increasing age of patients with UGIB and thepresence of severe life-threatening co-morbidity***(Rerknimitr, 2008).***

Patients who have upper gastrointestinal bleeding must be promptly and accurately clinically assessed, to provide arational basis for key early decisions on their medical management. The medical history, physical examination, and initial laboratory values are important in assessing resuscitation requirements, triage, endoscopytiming,consultation requirements,and prognostication***(Cappell and Friedel,2008).***

Esophagogastroduodenoscopy (EGD) is the prime diagnostic and therapeutic tool for upper gastrointestinal bleeding. It is the procedure of choice.It accurately delineates the bleeding site and determines thespecific cause, it provides a

rational basis for triage of patients for routinehospital admission versus ICU (intensive care unit) admission, it helps assess the need for surgery,it provides valuable prognostic information, and it can be used to applythe recently greatly expanded armamentarium of endoscopic therapy***(Cappell and Friedel, 2008).***

Upper gastrointestinal bleeding Patients should be stratified into low and high risk by using prognostic scales, on the basis of clinical, laboratory, and endoscopic criteria. Early identificationof high-risk patients allows appropriate intervention, which minimizes morbidity and mortality ***(Barkun et al., 2010).***

It has been shown that an early intensive resuscitation of patients with upper gastrointestinal bleeding significantly decreases mortality and myocardial infarction (MI) rates. Insufficient early resuscitation is believed to be the main factor for a persistently high mortality rate in UGIB patients ***(Rerknimitr, 2008).***

Intensivists are regularly confronted with the question of gastrointestinal(GI) bleeding. They notably need to manage acute gastrointestinal bleeding, a frequent and severe condition. They also should define, for each patient admitted to intensive care, how to prevent upper gastrointestinal bleeding related to stress ulceration ***(Osman et al., 2012).***

Etiology and pathophysiology of upper gastrointestinal bleeding

· Epidemiology:

Upper gastrointestinal bleeding represents a substantial economic andclinical burden, with reported incidence ranging from 48to 160 cases per 100,000 adults per year, andmortality rate ranging from 10% to 14%***(Barkunet al.,2010).***

Upper gastrointestinal bleeding is defined as bleedingderived from a source proximal to the ligament of Treitz (suspensory muscle of the duodenum), to differentiateit from lower gastrointestinal bleeding (LGIB) involving the colon, andmiddle gastrointestinal bleeding involving the small intestine distal to the ligament of Treitz***(Cappel and friedel, 2008).***

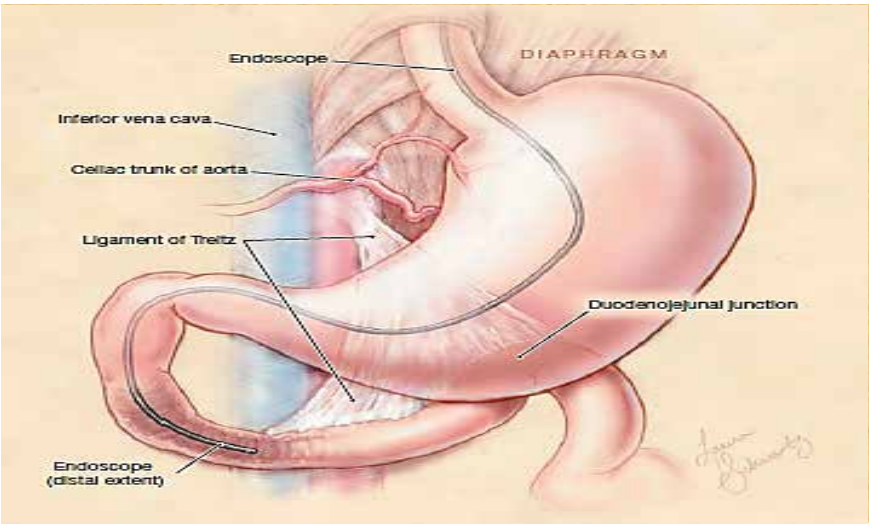

Fig.(1): Anatomical landmarks and location of UGIB***(Srygley et al., 2012).***

The mortality has decreased only minimally during the last 30years, despite the introduction of endoscopic therapy that reduces the rateof rebleeding.This phenomenonhas been attributed to the increasingpercentage of UGIB occurring in the elderly, who have a much worse prognosisthan other patients because of their frequent use of antiplatelet medicationsor anticoagulants, and their frequent co-morbid conditions, especially renal and liver failure, heart disease and neoplasms,about 45% of patients now hospitalized for UGIB are more than 60 years old***(Cappell andfriedel,2008)***.

The incidence of upper gastrointestinal bleeding is higher in males than in females, in all age groups***(Button et al.,2011).***

Approximately 80% ofUGIB episodesstop spontaneously. Serious complications and death occur in the remaining 20% of the patients with persistent or recurrent bleeding ***(Wallneret al.,2007).***

· Etiology:

Upper gastrointestinal bleeding can be classified into major and minor causes. Peptic ulcer disease (PUD) is one of the major and the most common cause of UGIB in the United States, accounting for approximately50% of the cases,major risk factors for PUD include *Helicobacter pylori(H. pylori)* infection, use ofnonsteroidal anti-inflammatory drugs (NSAIDs) or aspirin, smoking, alcoholism,and prior history of

PUD.Patients who bleed after admissionfor another problem usually have PUD. Anothermajor cause ofUGIB is varicealhemorrhage which accounts for 10-25% of the cases,depending on the catchmentarea. Other relatively common causes of UGIB are inflammatorylesions of the upper gastrointestinaltract,Mallory-Weiss tears, angiodysplasia and Dieulafoy lesions***(Cappell and Friedel,2008).***

In Egypt, The most common cause of acute upper gastrointestinal hemorrhage is variceal in origin.Schistosomiasis and hepatitis C virus (HCV) are common diseases in Egypt. HCV currently infects 20.7% of the Egyptian population***(Gado et al., 2012).***

Table (1): Causes of upper gastrointestinal hemorrhage***(Cappell andfriedel,2008)***

Major causes of UGIB	Minor causes of UGIB
· Peptic ulcer disease · Esophageal and gastric varices · Hemorrhagic gastritis · Esophagitis · Duodenitis · Mallory-Weiss tear · Angiodysplasia · Upper gastrointestinalmalignancy · Anastomotic ulcers (after PUD surgery or bariatric surgery) · Dieulafoy lesion	· Cameron lesion · Gastric antral vascular ectasia (watermelon stomach) · Portal hypertensive gastropathy · Post chemotherapy or radiation sequelae · Gastric polyps · Aortoenteric fistula · Submucosal lesion/mass (eg, leiomyoma) · Connective tissue disease · Hemobilia · Hemosuccuspancreaticus · Kaposi sarcoma · Foreign bodies · Postprocedural: nasogastric tube erosions, endoscopic biopsy, endoscopic polypectomy, endoscopic mucosal resection, endoscopic sphincterotomy