Research article

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THE ROLE OF INFLAMMATION IN THE DEVELOPMENT OF ACUTE GASTRODUODENAL ULCER BLEEDING

The study was performed as a part of research work "Modeling responses of biological systems (cells, organs, body) to the effect of damaging factors" (state registration number 0109U008714).

ABSTRACT. Background. Gastroduodenal ulcer bleeding is one of the main causes of morbidity, mortality and high medical care expenses. It is unclear why regardless of the optimization of antisecretory therapy among the patients with peptic ulcer the frequency of bleeding remains as high. **Objective.** We suggest that acute bleeding development is related with hyperstimulation of acute inflammatory response due to macrophages dysfunction. **Methods**. To test this hypothesis we assessed characteristics of inflammatory process in different zones of the gastroduodenal area under acute bleeding in 46 patients. The number and distribution of neutrophils, eosinophils, plasma cells, mast cells, macrophages (CD68+), T- (CD3+) and B-lymphocytes (CD20+) were evaluated. **Results.** The comparison of morphological changes in ulcer margin and intact gastric mucosa has revealed that the development of ulcer bleeding is associated with acute inflammation. High recruitment of neutrophils in ulcer margin was associated with edema and alteration of covering epithelium. CD68-positive cells prevailed in subepithelial region. However, in the 2nd group number of macrophages ($p<0,001$) and neutrophils was dramatically higher ($p<0,01$), that was accompanied with glands damage. CD68-positive cells were found not only under epithelium, but also close to gastric glands isthmus where epithelial stem cells are located, within disrupted muscularis mucosae and near lymphocytes infiltrates. Macrophage number correlated with neutrophils recruitment ($r=0,696$; $p<0,01$), intensity of edema and alteration of ulcer margin ($r=0,741$; $p<0,001$). **Conclusion.** Ulcerogenesis is related with alternative changes in immune reactivity. Acute ulcer bleeding is associated with progressive acute inflammation correlating with increase of macrophages number in ulcer margin and their proinflammatory activation.

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Citation:
Sulaieva ON, Barinov EF, Kondratenko PG, Zharikov SO, Radenko EE. [The role of inflammation in the development of acute gastroduodenal ulcer bleeding]. Morphologia. 2014;8(1):85-9. Ukrainian.

References:

1. Kondratenko PG, Smirnov NL, Radenko EE. Ostroe krovotechenie v prosvet organov pischevaritelnogo kanala [Acute bleeding into the alimentary canal]. Donetsk; 2006. 420 p. Russian.

2. Laine L, Jensen DM. Management of patients with ulcer bleeding. Am J Gastroenterol. 2012 Mar;107(3):345-60; quiz 361. doi: 10.1038/ajg.2011.480. Epub 2012 Feb 7. Cited in: PubMed; PMID: 22310222.

3. Korolev MP. [Gastroduodenal bleedings as a problem of emergency surgery]. Vestnik hirurgii im. I.I. Grekova. 2011;170(2):52-5. Russian.

4. Bratanic A, Puljiz Z, Ljubicicz N, Caric T, Jelicic I, Puljiz M, Perko Z. Predictive factors of rebleeding and mortality following endoscopic hemostasis in bleeding peptic ulcers. Hepatogastroenterology. 2013 Jan-Feb;60(121):112-7. Cited in: PubMed; PMID: 22709912.

5. Barinov EF, Sulaieva ON, Kondratenko PG, Radenko EE, Deliy VYu. [Gastric and duodenal mucosa protection and defense]. Current gastroenterology. 2011;61(5):36-43. Ukranian.

6. Avtandilov GG. Meditsinskaya morfometriya [Medical morphometry]. Moscow: Meditsina; 1991. 381 p. Russian.

7. Sulaieva ON. [Interaction between tissues in gastroduodenal area depend on organism reactivity among patients with ulcer bleeding]. Visnyk problem biologii i medytsyny. 2011;2:177-80. Russian.