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A REVIEW ON NEW MANAGEMENT ASPECTS (THERAPY) IN PEPTIC ULCER DISEASE

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ABSTRACT

Peptic ulcer is a common and rare disease via stress. The problem of peptic ulcer disease, in the particular bleeding and perforation, continue to present study as an emergency. In current years, this was found the H2S is involved in various physiological and pathological processes in the body, which in regulates the motility, resists the inflammation, affects the visceral sensitivity, and promotes glandular secretion. In the peptic ulcer the new management aspects treatment of disease like non operative management, operative management, invasive test, non invasive test etc. These therapy is the manage of peptic ulcer disease in future.

KEYWORDS: Peptic ulcer, Stress, Hydrogen Sulfide, H. Pylori bacteria, New therapy in ulcer, Testing.

INTRODUCTION

The incision of a peptic (gastric or duodenal) ulcer is a possibly surgical emergency that the remains of a redoubtable health burden in worldwide. The world wide prevalence of peptic ulcer disease has reduces in recent years, but this has not been followed by a similar fall in complications from peptic ulcer disease. In the problem of peptic ulcer disease, in the particular bleeding and perforation, continue to present as an emergency.[22]

The incidence of Helicobacter pylori and non-steroidal anti-inflammatory drug (NSAID) or aspirin-negative peptic ulcer disease has increased steadily over the last two decades, especially in the USA and Western Europe, and in countries where H. pylori infection rates are low or declining. This has been suggested that the occurrence of idiopathic peptic ulcer disease varies inverted with H. pylori infection rates in a given population.

The Stress is explain as an acute warning to the homeostasis of an organism. The Stress provide it adaptive responses that serve to protect the strength of the internal environment. These Ulcers are an open sore of the skin and mucus membrane of its characterized by discard of inflamed dead tissue. These peptic ulcers are destruction of lining in stomach or the duodenum layer. In the two mostly popular varity of peptic ulcer are called "gastric ulcers" and "duodenal ulcers". Functional gastrointestinal disorders (FGID) are associated with increased anxiety and depression and have a large negative impact on the quality of life. Three of the most common types of FGID are irritable bowel syndrome (IBS), functional abdominal pain, and functional dyspepsia.[21]

The hypothesis has no any rational basis and depend on mathematical evaluations. In actual fact, in some high H. pylori prevalence countries the rate of idiopathic peptic ulcer disease is high, and in some countries with a low prevalence of H. pylori infection the rate of idiopathic peptic ulcer disease is low.[20]

The Stress is explain as a problem state of homeostasis caused by inner or outer stimuli, and the gastrointestinal tract is the main organ (part) that show to stress. The Stress-induced ulcer in gastric mucosal lesion (SGML) is an acute GML both are mainly characterized by inflammatory and gastrointestinal bleeding, which have a high mortality rate and is one of the most common visceral complications following trauma. Thus, the inspect mechanisms that underlie the development of SGML as well as the identification of more effective, safer and more affordable drugs have become one of the research hotspots in modern biology.[16]

Hydrogen sulfide

Hydrogen sulfide (H2S) is the third gas signaling molecule to be found, following nitric oxide and carbon monoxide. H2S is produced endogenously from cysteine by the pyridoxal-5'-phosphate-dependent enzymes, cystathionine β-synthase (CBS) and/or cystathionine γ-lyase (CSE). Previously, a number of studies have suggested that H2S has anti-inflammatory, anti-oxidative and anti-apoptotic effects.[19]

The H2S is released from L-cysteine by both CSE and CBS, with the factor of cysteine amino transferase, that is called "trans-sulfuration pathway". Both CSE and CBS enzymes are pyridoxal-5′-phosphate-dependent with dissimilar concentrations in various tissues. This was previously reported the CBS is mostly located in the central nervous system (hippocampus, cerebellum, cerebral cortex, and brain stem).[18]

That review was presents the manufacture of H2S and the confirmation of its role in the retinal physiology and different retinal diseases including the retinal degenerative.[17]

Hydrogen sulfide (H2S) is a new type of endogenous gaseous signaling molecule, and many tissues in the body can catalyze L-cysteine to H2S via cystathionine-synthase (CBS) and cystathionine-γ-lyase (CSE). In recent years, the H2S is involved in various physiological and pathological processes in the human body, that regulates the motility, resists the inflammation, effect on the visceral sensitivity, and promotes glandular secretion. This is regulating of digestive tract motility, mainly manifested as the suppression of intestinal motility. The administration of sodium hydrosulfide (NaHS; a H2S donor) can increase the release of colon mucosal and submucosal chloride in guinea pigs concentration-dependent manner, and this secretion can be inhibited by H2S CSE and CBS blockers.[3]

Krueger et al found that H2S promotes intestinal secretion via activation of transient receptor potential vanilloid-1 (TRPV1) receptor and the release of SP, thus activating cholinergic neurons.[16]

The Pathological processes in peptic ulcer results from the exact pathogenesis of peptic ulcers is not clear, but diverse factors, including consumption of nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroids, stressful lifestyle, alcohol consumption, Helicobacter pylori (H. pylori) infection, smoking, and family history are added as risk factors in the peptic ulcer disease.

Oxidative damage:- The tissue injury is always connected with acute generation of free radicals like as reactive oxygen species (ROS) that cause oxidative stress and mucosal injury.

Gastric mucus:- The gastric layers act as a barrier which limits the vulnerability of the gastric cells to various harmful agents of both exogenous and endogenous origination.

NSAIDs:- NSAID-induced is the most serious complication of any synthetic drug therapy. This is now well provided method for ulceration that induced by NSAIDs is mediated by defeat of the cyclooxygenase pathway and block the synthesis of PG.[15]

H. pylori infections:- These are the main risk factors for PUD, not only all individuals infected with H. pylori or taking NSAIDs develop peptic ulcer. Half of the world's

population is occupy by H. pylori. The generality of H. pylori is higher in developing countries.[14]

Pathogenesis of H. pylori infections

Considerable experimental evidence indicates that the H.pylorigen otypeisa substantial factor determining the type of induced disease. There are also some host factors, like a polymorphism of the IL-1β, which effect the gastric acid secretion, and polymorphism of the CYP2C19, this is generally the main enzyme metabolizing PPI (proton pump inhibitor), that are connected with the risk of gastric cancer development.[13]

This is one of the most common microorganisms agents able to prepare human gastric mucosa. The H. Pylori grows many factors or plans adapt to this harsh environment and establish persistent infection.[10,11,12]

The main factors involved in the adaptation to acidic stomach conditions, many virulence and bacterial factors produced by some H. pylori clinical isolates engage in the development of disease symptoms.[7,8,9]

New management aspects in peptic ulcer disease

The Peptic ulcer is a surgical crisis associated with excessive mortality if untreated. In general, the all patients with this disease require cause resuscitation, intravenous antibiotics, analgesia, proton pump inhibitory medications, nasogastric tube, urinary catheter and surgical source control.[6]

1. **Non-operative management:-In this management** studies have been shown that about 40%-80% of Peptic ulcer disease will seal spontaneously with conservative management and overall morbidity and mortality are comparable.

If any patients are clinically stable and improving with disease, especially with a sealed perforation, surgery may not be justified. However, if regardless of the presence and size of the leak in ulcer, urgent operation is indicated.[6] (2017 pud) (6)

2. **Operative management:-** Management of PPU is primarily surgical and different suture techniques for closure of the perforation are described. That the “every doctor who is faced with a perforated ulcer of the gastrointestinal tract must be consider opening the

abdomen, sewing up the hole and preventing a possible inflammation by a peacefully cleansing of the abdominal cavity.

Today's many operative methods are used for peptic ulcer disease. The Primary closure via interrupted sutures, covered with a pedicled omentum on the peak of the reconstruction (Cellan-Jones repair) and plugging the injury with a free omental plug (Graham patch) are the most common techniques.[6]

3. Invasive Tests

a. Endoscopy:- Since the first isolation of H. Pylori bacteria, some studies have aim to evaluate the accuracy of white light endoscopy (WLE) to recognize the infection, stand on specific gastric mucosa features. For example, the presence of antral nodularity, observed during endoscopy, was associated with a sensitivity ranging from 39.8% to 96.4% and a specificity ranging from 83.6% to 100%.

The outcome found with the narrow band imaging (NBI), this is uses blue light from a laser source (415 nm) to spot the vascular architecture of the gastric mucosa.[1]

(5) Tongtawee et al. were able to predict H. pylori infection depend on distinct manner of gastric mucosa, noticed by conventional NBI. In addition, the magnifying NBI technique showed a sensitivity and specificity greater than 95% in detecting intestinal metaplasia, especially when a light blue crest or white opaque substance were present, and proved to be significantly superior ($p < 0.0001$) to serology (pepsinogenI/IIratio).

Sato et al. discovered that EC patterns, like as normal strong type, or the normal papilla-drastic type, visualized in to the corpus and antrum, were make of normal mucosa and of the absence of H.pylori infection. In recent years, an in vivo method was also grow, based on in situ hybridization fluorescence, make possible the diagnosis of infection during endoscopy.

All recent evaluation of endoscopy for the identification of H. pylori infection and noticing of pre-malignant and malignant gastricmucosa. In the some recent years, there were also an try to use more tools to diagnose H. pylori. For example, **Nakashima et al.** expand an artificial intelligence approach. That method has been demonstrated to better the accuracy and productivity of endoscopic examination, with respect to WLI.

b. **Histology:-** Histology The examination of gastric mucosal biopsy specimens remains the gold standard for the detection of H. Pylori infection is consist the sensitivity of 95% and a specificity of 98%. For example, in a sequence of 213 patients, the detection of atrophic gastritis or intestinal metaplasia.

c. **Rapid Urease Test:-** Upper endoscopy also allows to collect biopsy specimens for urease testing. The method have been many advantage from the presence of urease by the organism and, in media carry urea, the various enzymes are releases ammonia, increasing the pH and resulting in a color change of the medium.

d. **Culture:-** In addition to histological examination and RUT, upper endoscopy offers the opportunity to collect gastric specimens for bacterial culture, susceptibility testing and, eventually, organism genotyping. The culture is highly specific, it has low sensitivity, as H. Pylori infection is difficult to grow, and experienced laboratories are required. Sensitivity may be improved by sending the specimen to the laboratory within 30 min from collection, using a pre-heated 35◦C bloodagar (BD Diagnostics, Sparks, MD,USA) and a helicobacter selective agar, containing the antibiotics colistin and polymyxin.

4. **Non-Invasive Tests:-** Non-invasive tests can be divided into those able to detect an active infection, such as the urea breath test and stool antigen test, and those able to provide information on current or prior H. pylori infection, without discrimination.

a. **Urea Breath Test:-** The 13C-urea breath test (UBT) is the non-invasive method of choice to determine H. pylori status when available. The urea substrate is enriched with a labeled carbon isotope, that may be non-radioactive (13C) or radioactive (14C) and ingested, usually, with a test meal to prolong the permanence of urea in the stomach.[1]

The 13C-urea is available on the market in different formulations, such as powder, capsules and tablets ranging between 50 and 100 mg, however the cost may be expensive for low-income countries. Brazilian substrate for the UBT that appear a similar diagnostic exact compared with the commercial formulation. (**Coelho et al) 4.**

b. **Stool Antigen Test:-** To the culture of H.pylori infection from feces is very tough and time preserving, so their contraries provide non-invasive tests able to detect H. pylori antigen in stool specimens are simple to perform and large head-to-head comparisons with other tests demonstrated the high diagnostic accuracy of this approach.

Overall, stool monoclonal antibody tests are superior to polyclonal antibody tests and demonstrated a pooled sensitivity and specificity of 93% and 96%, respectively. They also showed an excellent diagnostic accuracy in pediatric setting, especially when tests are ELISA based rather than immune chromatography based.

c. **Molecular Testing:-** Molecular techniques should be preferred when available. The traditional or modified real-time the (RT) PCR allows for the observation of bacteria, and partition for antibiotic sensitivity. The real-time PCR proved to be more exact when compared with another techniques for the detection of H. pylori in patients exposed to PPI, and was shown to be able to detect as few as 10 copies in adults and children.
d. **Serology:-**Unlike UBT and stool antigen testing, serology does not distinguish between an active or past infection, although in a recent study, antibody response to H.pylori proteins, such as VacA, GroEl, HcpC, CagA, Tip-α, HP1564, and HP0175 specify an active H. pylori infection with a peak diagnostic accuracy. Detection of serum IgG against H. pylori is depend on the enzyme-linked immunosorbent assays (ELISA). There are Several kits available on the market and, they are highly sensitive and fixed. However, to the maintain of highly distinct accuracy. In the United States, despite the ACG and AGA guideline suggest, serologic tastings were the most commonly prescribed assay for the evaluation of H. pylori infection, until few years ago.
e. **Tests on Plasma, Blood, Saliva and Urine:-** The test was reported by several authors as the most comprehensive non-invasive diagnostic test, as it avoids false and negative results, with respect to conventional tests. For example, in a study to the performed in Korea, a reduce PG I/II ratio was significantly associated with chronic atrophic gastritis and intestinal metaplasia ($p < 0.001$) and, inversely, an high ratio correlated with endoscopic findings, like as gastric and duodenal ulcer or nodular gastritis. A similar association between a decreased PG I/II ratio and precancerous gastric conditions was also confirmed in several European countries, although the authors criticized the PG low specificity and its testing limitation for assessing gastric cancer risks.[1]

CONCLUSION

The peptic ulcer is a global disease. There are various reason for that disease, H.Pylori bacteria, stress, NSAIDS, Smoking, Alcohol etc. In this paper we have concluded that in the market provide the various treatment for peptic ulcer. These therapies are safe for PUD. The

new therapies of the disease are like invasive (Endoscopy, Histology), non-invasive (urea-breath test), operative management & non-operative management.

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