Abstract: Gastric pit cells express mitogen oxidase1 (Mox1) and essential components for the phagocyte NADPH oxidase (p67-, p47-, p40-, and p22-phoxes). Helicobacter pylori (Hp) lipopolysaccharide (LPS) is a potent up-regulator of the Mox 1 oxidase. In this study, we examined the expression levels of several key members of the Toll-like receptor (TLR) family in primary cultures of guinea pig gastric pit cells. These cells expressed the TLR4 mRNA. Immunoblot analysis and immunofluorescence histochemistry with an anti-TLR4 antibody showed that gastric pit cells possessed significant amounts of TLR4 protein preferentially on the plasma membrane. In contrast, the cells did not express the TLR2 and TLR9 transcripts and did not contain detectable amounts of TLR2 protein. Neither peptidoglycan from Staphylococcus aureus nor Hp DNA with the CpG motif up-regulated Mox1 oxidase activity. Hp LPS activated nuclear factor-κB in association with the expression of cyclooxygenase II and tumor necrosis factor α transcripts. These findings suggest that TLR 4 may play a crucial role in the initiation of inflammatory responses of gastric pit cells against Hp infection. J. Med. Invest. 48 : 190-197, 2001

Keywords: toll-like receptor, gastric pit cell, Helicobacter pylori, mitogen oxidase 1
Preparation and culture of gastric mucosal cells under LPS-free conditions

Preparation of Hp LPS and CpG DNA

Detection of TLR, cyclooxygenase II (COX II), TNF-α, and actin transcripts

Measurement of O₂ production
Detection of TLR proteins

Immunofluorescence histochemistry

Gel mobility shift assay.

Statistical analysis

Effects of Hp components on O$_2^-$ production
Expression of TLRs on gastric mucosal cells
Expression of TLR2 and 4 proteins in gastric mucosal cells

LPS-induced expression of COX II and TNF-α mRNAs
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The occurrence of Helicobacter pylori in patients with gastrointestinal disease has been extensively studied in recent years. The presence of H. pylori in the stomach is well established and is associated with a variety of diseases, including peptic ulcer disease, gastric and duodenal ulcers, and gastric cancer. The eradication of H. pylori has been shown to decrease the risk of peptic ulcer disease and gastric cancer. However, the role of H. pylori in the pathogenesis of ulcerative colitis is less clear. Some studies have suggested that H. pylori infection is associated with ulcerative colitis, while others have found no association.

In this review, we will examine the current evidence regarding the role of H. pylori in the pathogenesis of ulcerative colitis. We will discuss the epidemiology of H. pylori infection and its association with ulcerative colitis. We will also review the clinical manifestations of ulcerative colitis and the diagnosis and treatment of H. pylori infection.

H. pylori is a small, helical, gram-negative bacterium that is commonly found in the gastric mucosa. It is transmitted from person to person through the oral-oral route and is acquired early in life. H. pylori infection is associated with a variety of gastrointestinal diseases, including peptic ulcer disease, gastric and duodenal ulcers, and gastric cancer. The eradication of H. pylori has been shown to decrease the risk of peptic ulcer disease and gastric cancer.

The pathogenesis of H. pylori infection is complex and involves a variety of factors. H. pylori produces a number of virulence factors that enable it to colonize the gastric mucosa and survive in the presence of gastric acid. These factors include urease, which neutralizes stomach acid, and CagA, a protein that induces inflammation.

The clinical manifestations of ulcerative colitis are varied and can include diarrhea, rectal bleeding, abdominal pain, and weight loss. The diagnosis of ulcerative colitis is based on the clinical presentation and endoscopic findings. The treatment of ulcerative colitis is aimed at controlling inflammation and preventing complications.

In conclusion, H. pylori infection has been associated with a variety of gastrointestinal diseases, including peptic ulcer disease, gastric and duodenal ulcers, and gastric cancer. The eradication of H. pylori has been shown to decrease the risk of peptic ulcer disease and gastric cancer. However, the role of H. pylori in the pathogenesis of ulcerative colitis is less clear. Further research is needed to better understand the relationship between H. pylori infection and ulcerative colitis.

References


Helicobacter pylori

T. Kawahara et al.  Role of TLR 4 in gastric pit cells
Helicobacter pylori