

HELICOBACTER PYLORI

EDITED BY:

DR. RGW. PINTO

PROFESSOR AND HEAD

DEPT OF PATHOLOGY

GOA MEDICAL COLLEGE

BAMBOLIM GOA

EX DEAN GOA UNIVERSITY

PRESIDENT ASIAN SOCIETY OF CYTOPATHOLOGY

H.PYLORI

BY:DR.R.G.W.PINTO

Helicobacter Pylori
Campylobacter pylori

Gram negative
Flagellated
Helical bacteria
Rid shaped curved
Resides in Stomach

In 1983 Australian doctors
Barry Marshall and
Robin Warren

Two thirds of the world's population harbour s this org
Most are asym

Colonization and virulence

Gastric
Chronic gastritis
Atrophic gastritis
DU
GU
Gastric Carcinoma
MALT Lymphoma. DLBCL

89 percent of Gastric carcinoma are due to this org

Extra GIT lesions
Anemia iron def .it B 12 def
Diabetes
CVS
Neurological

H pylori protect / protective
against
Asthma
Esophageal ca
IBD
GERD
Crohns

Stains
Giemsa
H and E

Warthin Starr silver impregnation
Acridine orange
Phase contrast
Alcian. yellow toluidine blue
Genta stain
IHC

Org produce biofilms

Oxidase
Catalase
Urease

Genome of org is sequenced

No symptoms
Lasts lifelong

It is a Class I carcinogen
Ca Stomach
Gastric Lymphoma

Gastric carcinoma cases 50 percent present with LN mets at initial presentation

ROS Reactive oxygen species
RNS Reactive Nitrogen species

Cytokines
Pro inflammatory
DNA damage
Oxidative DNA damage
Oxidative stress
DNA breaks

H pylori also causes
Gastric polyps
Colorectal polyps

Clinical
No symptoms
St ache .nausea .dyspepsia.indigestion .depression. anxiety
Abd pain .bloating.belching
Hunger
Vomiting. Heartburn
Bad breath weight loss
Complication bleeding
Tarry stools

Evades the immune response
Colonize
Flagella

Urease
Adhesions
Protease
Exotoxins
CagA is a oncoprotein assoc with Ca St

Epigenetically
Decreased DNA repair
Increased DNA damage

Methylation

Free radicals
Mutation
Perigenetic pathway
Inf
TNF IL 6
Mutations in tumor suppressor genes

Flagella
2 to 7
In one pole
Burrows in mucus
Gastric pits
Biofilm

Urease breaks down urea into Ammonia and HCO_3^-

CagA Cytotoxin assoc antigen.A
Oncoprotein

Biofilms
Biopolymerase
Microcolonies
Aggregated bacteria

Diagnosis
When to test
Chronic peptic ulcer disease
Low grade MALT L
After Endoscopic resection of early Gastric ca
First degree relatives with Gastric ca
Cases of indigestion
Long term aspirin
Non steroidal anti inf
Unexplained iron def
ITP

Non invasive
Serology

Stool for antigen
Urea breath test
Carbon urea breath test
Biopsy multiple samples
Rapid Urease
Culture

Transmission
Contagious
Oral Oral
Feco Oral

Bacteria is seen in feces . Saliva .dental plaques
Contaminated water

It thrives on high salt diet

Rekurs
Original strain. Recurrence
Diff strain Reinfection

Epidemiology
Two thirds of the world's population harbours this org
Common in
South America
Sub Sub Saharan Africa
Middle East

Early age intense inf
Old age mild

In 1982 -1983
Barry Marshall and Robin Warren
University of western Australia Perth Australia

Robin Warren was a pathologist
Barry Marshall was a clinician
Barry Marshall drank a beaker of H Pylori culture
After Few days .10 days became ill Nausea .Vomiting
Endoscopy showed Gastritis
Both received the Nobel Prize in Physiology or Medicine in 2005

H pylori related gastritis
Lamina propria expanded
Lymphocytes .Plasma cells
Plasmacytosis
Neutrophil mediated ep injury
H pylori demonstrated by IHC
Sites antrum
Cardia

H pylori is the first and only bacterium to be labelled as a carcinogen

It causes Gastric Adenocarcinoma and Gastric Lymphoma

H pylori inf leads to increased epithelial cell proliferation of the Gastric ep cells in a background of chronic inflammation

Inflammatory milieu

Geno toxic agent

Reactive oxygen species

Reactive Nitrogen species

Oncogenes

Oncoproteins

Cytotoxin Associated A gene (CagA)

Unregulated cell growth

Only 3 percent of infected pts get cancer or Lymphoma or both

ANTI HELICOBACTER PYLORI DRUGS

By:Dr.Pranali Mopkar

ANTIMICROBIALS

- Antimicrobials that are used clinically against H. pylori are: amoxicillin, clarithromycin, tetracycline and metronidazole/tinidazole.
- However, any single antibiotic is ineffective.
- Resistance develops rapidly.
- Anti – H pylori regimen consist of 2 antimicrobials.
- **STANDARD TRIPLE THERAPY**
- PPIs + 2 antimicrobials
- **BISMUTH QUADRUPLE THERAPY**
- CBS + PPIs + 2 antimicrobials
- advocated for eradication failure cases.

one week triple drug regimen

- For majority of cases
- H.pylori eradication rate is upto 85% cases

two week triple drug regimens

- higher eradication rate (upto 96%)
- Produces more adverse effects, are more expensive and compliance is poor.
- Reserved for patients not achieving complete eradication with 1 week regimens.

Anti-*H. pylori* Regimens*

1. First-line regimen (for 7 days)

- PPI
- Amoxicillin
- Clarithromycin or Metronidazole

2. Second-line regimen (for 7 days)

(for patients still symptomatic or H. pylori positive after 1st line treatment)

- PPI + Amoxicillin
- Clarithromycin or Metronidazole
(whichever not used in 1st line treatment)

3. Alternative second-line regimen (for 7 days)

(for patients who have received both metronidazole and clarithromycin)

- PPI + Amoxicillin
- Tetracycline or levofloxacin

4. Regimen for patients allergic to penicillin (for 7 days)

- PPI
- Clarithromycin
- Metronidazole

5. Third-line regimen (4 drugs for 10 days)

- PPI + Amoxicillin
- Bismuth subcitrate (CBS)
- Clarithromycin or Metronidazole or Tetracycline

Standard dosing schedule for adults

Omeprazole 20 mg BD	Amoxicillin 1000 mg BD
Esomeprazole 20 mg BD	Clarithromycin 500 mg BD
Lansoprazole 30 mg BD	Metronidazole 500 mg BD
Pantoprazole 40 mg BD	Tetracycline 500 mg QID
Rabeprazole 20 mg BD	Levofloxacin 500 mg BD
	Colloidal bismuth subcitrate (CBS) 120 mg QID

Note: Tinidazole can be substituted for metronidazole.
*Adopted from British National Formulary (BNF) 83, pp. 91–92, Sept. 2022
PPI: Proton pump inhibitor.

- All regimens are complex and expensive, side effects are frequent and compliance is poor.
- Higher failure rates (20–40%) have been reported from India.
- Also, 5 year recurrence rate of H. pylori infection is higher.
- Three week treatment is being advocated by some.
- Nevertheless, long-term benefits of anti-H. pylori therapy include lowering of ulcer disease prevalence and prevention of gastric carcinoma/lymphoma.