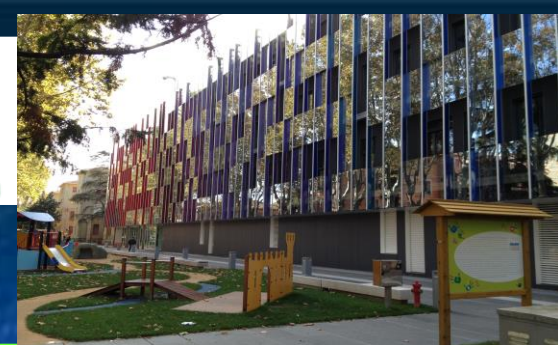


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Changes in antibiotic sensitivity in children with *H. pylori* infection over 13 years

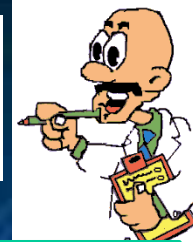
Marco Manfredi MD, PhD
Pediatrician & Gastroenterologist
"Pietro Barilla" Children's Hospital
University of Parma, Parma, Italy



World Congress and Exhibition on
Antibiotics

September 14-16, 2015 Las Vegas, Nevada, USA





Hindawi Publishing Corporation
Gastroenterology Research and Practice
Volume 2015, Article ID 717349, 5 pages
<http://dx.doi.org/10.1155/2015/717349>



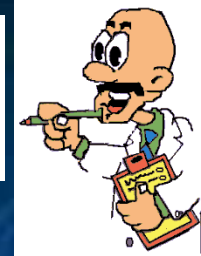
Hindawi

Research Article

**Primary Antimicrobial Susceptibility Changes in Children with
Helicobacter pylori Infection over 13 Years in Northern Italy**

**Marco Manfredi,¹ Pierpacifico Gismondi,¹ Valentina Maffini,¹
Barbara Bizzarri,² Fabiola Fornaroli,² Carmen Madia,¹ Antonino Salerno,¹
A. Marta Cangelosi,¹ and Gian Luigi de'Angelis^{1,2}**

no conflict of interest



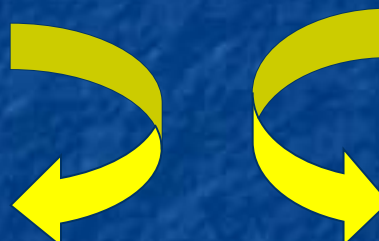
Helicobacter pylori infection

40%-50% developed countries

GI diseases

80% developing countries

Chronic Gastritis



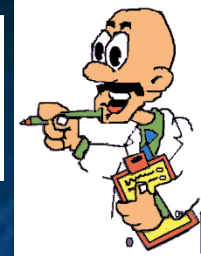
Gastric Cancer

Eradication



Risk of developing GC

European, Asian, American Guidelines



Many efforts have been made in trying to

Antibiotic Resistances

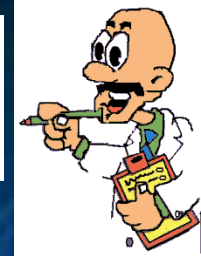
Several difficulties to overcome

Triple therapy = the main eradication therapy

Widespread use/abuse antibiotics (respiratory tract infections)

Maastricht guidelines





Effectiveness of triple therapy



mainly due to primary resistance towards antibiotics

80%

clarithromycin over the past 10 years

9.8%

17.5%

Maastricht



clarithromycin

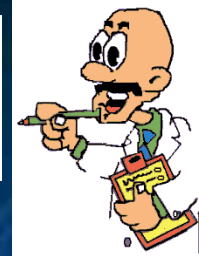
in empirical eradication therapy



testing susceptibility for this antibiotic

before using it if its resistance prevalence is higher than 15-20%





Gut 2011

ESPGHAN/NASPGHAN guidelines



antibiotic susceptibility testing for clarithromycin

before starting clarithromycin-based triple therapy

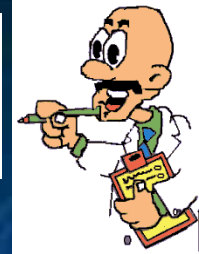
in areas/populations with a known high resistance rate (>20%)

In Italy the clarithromycin resistance is around 25% both in adults and children

Megraud et al, Gut 2013

Francavilla et al, J Pediatr 2010





Culture

common & specific

invasive diagnostic method

antimicrobial susceptibility of *H. pylori*



Thijs JC et al, Am J Gastroenterol 1996

sensitivity



variable (60–90%)



several methodological factors

time from sampling to processing

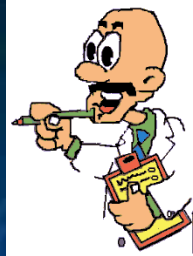
biopsy site

Transportation time

transport medium

culture medium

incubation conditions



culture of a single antral biopsy



the detection of *H. pylori* in > 90%

for optimal results

at least

One biopsy

antrum

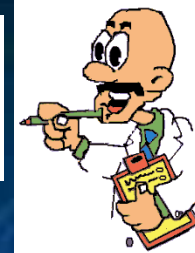
Two biopsies

corpus

to ensure a correct diagnosis



Dixon MF et al, Am J Surg pathol, 1996



in *H. pylori* eradication the most common antibiotics used

in children

amoxicillin

clarithromycin

metronidazole

ESPGHAN-NASPGHAN Guidelines, 2011



Looking for the best eradication therapy

if the antimicrobial susceptibility is not available

we should ask to patients

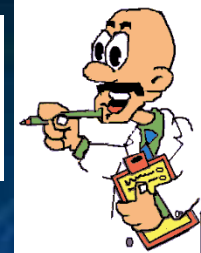
which

1

how many antibiotics

2

they used before



We wanted to evaluate the variations in primary antibiotic susceptibility over last 13 years in children with *H. pylori* infection in Parma, northern Italy comparing with our previous results obtained in 2001

Street ME, .. Manfredi M, et al, Arch Dis Child 2002



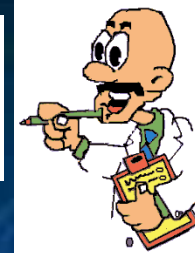
JANUARY 2011						
SUN	MON	TUES	WED	THURS	FRI	SAT
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29



DECEMBER 2012						
MON	TUE	WED	THU	FRI	SAT	SUN
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

we diagnosed by endoscopy and histological examination

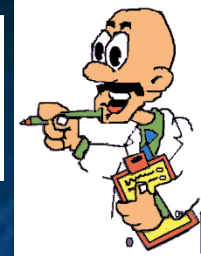
66 naïve children with *H. pylori* infection



Antibiotic	MIC interpretative values(µg/ml)	Resistance Rate (years 1998-99)	Resistance Rate (years 2011-12)	p Value
Metronidazole	>16	35 (56%)	15 (33%)	0.014
Clarithromycin	>4	10 (16%)	12 (26%)	0.142
Ampicillin	>4	2 (3%)	0	ns
Tetracyclines	>16	1 (2%)	0	ns
Metronidazole + clarithromycin		5 (8%)	3 (7%)	ns
Total		63/75 (84%)	46/66 (70%)	0.079

Table 3. Differences in antibiotic resistances.





The eradication of *H. pylori* infection represents an enormous challenge in gastroenterology

H. pylori is not so easily attachable

importance

local prevalence of antibiotic resistances

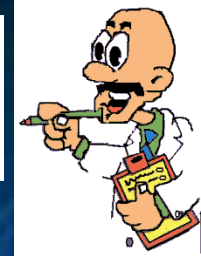
Better therapy

mainly if the antimicrobial susceptibility

~~Culture
development~~

therefore we must use an empirical eradication treatment

Megraud F et al, Gut 2013



Culture



Useful, but disadvantages

Difficulty

Sensitivity

High costs

Our study shows a decline of culture development of *H. pylori* over the last 13 years: from 84% in 1998/99 to 70% in 2011/12 with no statistically significant value

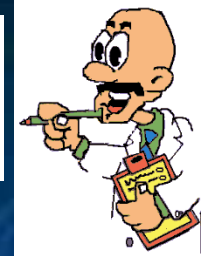
Three biopsy samples
RUT positive

Culture can
be negative

62% culture pos



Porowska B et al Aliment Pharmacol Ther 2012



On the contrary

Other Italian researchers obtained a very high culture development rate of 94% in adults



Saracino IM et al, J Gastrointestin Liver Dis 2012

Chronic PPI intake  main cause of culture failure



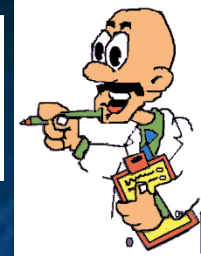
Selgrad M, Malferteiner P Aliment Pharmacol Ther 2012

biopsy specimens should also be taken from the gastric body

Culture
development



Intrinsic difficulty



ESPGHAN/NASPGHAN



~~clarythromicin~~

In empirical therapy

In areas with R > 20%

A good alternative choices

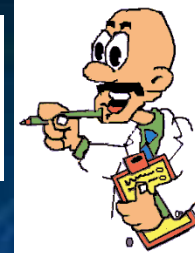
Bismuth-containing
quadruple therapy

(B+A+C+M)

Sequential
therapy

Horvath A et al, Aliment Paharmacol Ther 2012
Francavilla R et al, GUT 2008





Conclusion 1

H. pylori culture

could now be substituted by molecular methods

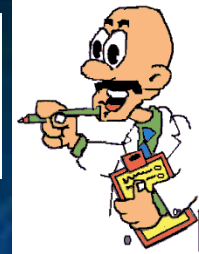
FISH

PCR

biopsies

do not require strict conditions of biopsy specimens transport

can be used to detect the point mutation associated to clarythromycin-resistance



Conclusions 2

Before recommending *H. pylori* eradication therapy

we should know

either

the antibiotic susceptibility of patient

or

the local distribution
of antibiotic resistance rates

to have higher successful probabilities



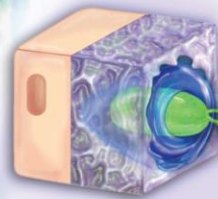
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Helicobacter pylori

Detection Methods, Diseases
and Health Implications



*Bacteriology Research
Developments*

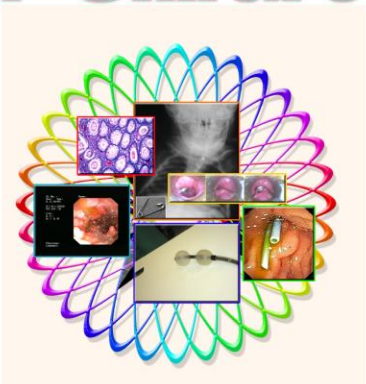


Marco Manfredi
Gian Luigi de'Angelis
Editors

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Gastrointestinal Endoscopy in Children



Marco Manfredi, MD, PhD, Pediatrician and Gastroenterologist,
"Pietro Barilla" Children's Hospital, Azienda Ospedaliero-Universitaria,
University Hospital, Parma, Italy

Gian Luigi de'Angelis, MD, PhD, Full Professor of Pediatrics, Chief
of Gastroenterology and Endoscopy Unit, Director of Pediatrics
Department, Azienda Ospedaliero-Universitaria,
University Hospital, Parma, Italy



nova
biomedical

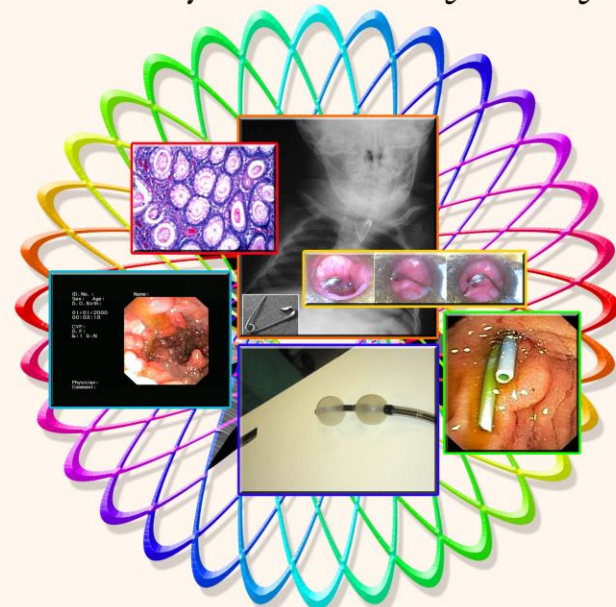
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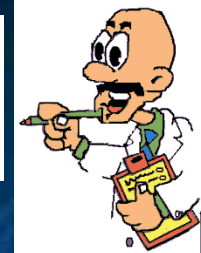
Thank you for
your attention





World Congress and Exhibition on Antibiotics

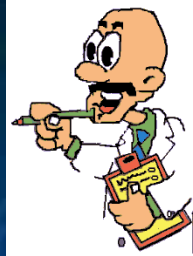
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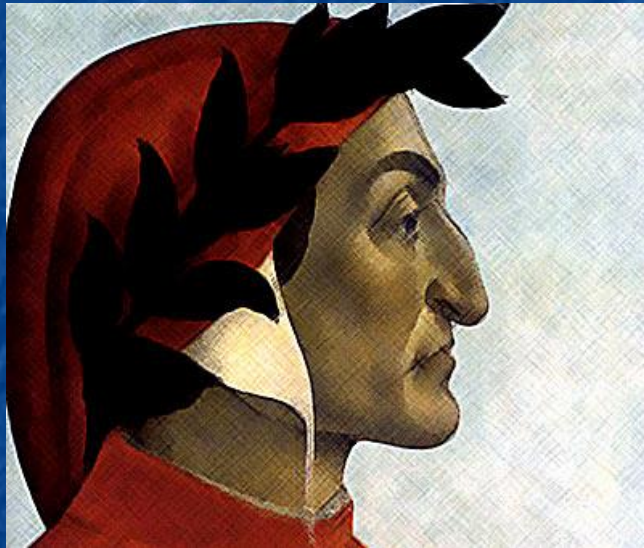
Track 3: Antibiotics in Prevention and Treatment

Marco Manfredi MD, PhD

of Inflammatory and Infectious Diseases



Dante Alighieri drew inspiration for the mountain of Purgatory



"...You can walk at Sanleo, near Urbino, and descend to Noli, near Savone: you can climb Mount Bismantova, south of Reggio, up to the summit, on foot: but here a man had to fly..."

Dante Alighieri
Divina Commedia Purgatory
Canto, IV, 26





Thank you for
your attention

