

ANTIBIOTIC RESISTANCE IN HELICOBACTER PYLORI

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Epidemiology and treatment of Helicobacter pylori infections

H. pylori infections cause about 90% of duodenal and about 75% of gastric ulcers. H. pylori was identified in 1983, and it soon became clear that the infection was difficult to treat. In adults the transmission rate of H. pylori infection is extremely low, under 1%. Children, especially those under 5 years of age, are much more susceptible to infection. Furthermore, recent studies suggest that the occurrence of resistant strains of H. pylori is generally higher in children. Satisfactory elimination rates for H. pylori require at least one week of "triple" therapy, consisting of an acid pump inhibitor and two different antibiotics. In particular, metronidazole, clarithromycin, amoxicillin and tetracycline have proved effective. Combinations of two of these antibiotics result in elimination rates approaching 90%. However, most trials have not paid attention to specific antibiotic resistance patterns in the population under study.

Resistance patterns

About 30% of H. pylori strains are chiefly resistant to metronidazole. As this frequency does not seem to have increased for several years, metronidazole can still be used to treat H. pylori infection. Several studies have shown clarithromycin to be extremely effective, and in recent years this antibiotic has been increasingly used for treatment. Unfortunately, H. pylori develops resistance to this macrolide with relative ease. In parallel with its increasing use, resistance to clarithromycin has risen from a few percent to more than 10-20% over recent years in many European countries, including Denmark. This resistance is often combined with resistance to metronidazole. Amoxicillin resistance has also been described in H. pylori isolates, but its occurrence is still very sporadic. Amoxicillin resistance is related to specific changes in the bacteria's penicillin-binding enzymes and is therefore part of a general resistance to penicillin. Tetracycline resistance is poorly described, and this antibiotic is in any case only rarely used to treat H. pylori infection in Denmark because of its general side effects and the selection of multiresistant bacteria.

Resistance surveillance

The Dept. of Abdominal Surgery at Kolding Hospital and the Dept. of Gastrointestinal Infections at Statens Serum Institut have performed a collaborative study of resistance patterns in H. pylori isolates. The following eradication regimen is recommended at Kolding Hospital for H. pylori infections requiring treatment: acid pump inhibitor, amoxicillin 1 g b.d. and clarithromycin 500 mg b.d. for one week. From 1998 to 2000 gastric biopsies from 383 patients were sent for culture at Statens Serum Institut, in which 45 patients (12%) were shown to have H. pylori infection. Of the 45 isolated H. pylori strains, seven (16%) were clarithromycin-resistant and 14 (31%) were metronidazole-resistant. Five strains were resistant to both clarithromycin and metronidazole, corresponding to 71% of the clarithromycin-resistant and 36% of the metronidazole-resistant strains. During the same period, routine culture of 120 specimens sent in from the whole country gave 18 positive H. pylori isolates, of which seven (39%) were resistant to metronidazole and five (28%) to both clarithromycin and metronidazole.

Comments

The current resistance pattern of H. pylori in Denmark is poorly elucidated, as culture and subsequent resistance determination are performed for only a few patients. Culture and resistance determination are recommended for all cases of treatment failure. In addition, it should be a prerequisite for recommending specific H. pylori eradication regimens that the resistance pattern of unselected H. pylori strains is known for the region in which the treatment is to be used. Surveillance of eradication strategies and H. pylori resistance patterns will be an important prerequisite for effective treatment of H. pylori infection in future. (A. Munk Petersen, K. A. Kroghfelt, Dept. of GI Infections, S. Jensen, O. Vinge, P. Gjøde, Kolding Hosp.)

OUTBREAK OF SALMONELLA BOVIS-MORBIFICANS - UPDATE

The outbreak of Salmonella bovis-morbificans, EPI-NEWS 25/01, is continuing. The clinical picture is of a self-limiting gastroenteritis. As in

most Salmonella infections, there is usually no indication for antibiotic treatment. By 1 September 2001, 142 culture-confirmed cases had been recorded, 121 of which have the same DNA "fingerprint" (epitype), while four isolates have not yet been typed. The age distribution of the patients is similar to that seen in infection with other types of Salmonella, but there is a slight female preponderance (62%), especially in the 35-50-year age group. Cases have occurred throughout the country, but the distribution is not quite even, North Jutland showing the highest and the Copenhagen area showing the lowest incidence. Since week 25 a third case-control study has been completed, which, like the previous studies, has not indicated the source of the outbreak. Despite intensive investigations, the bacterium has not been found in animals or foods. Despite the so-far negative results, the source of infection is suspected to be a foodstuff of animal origin produced in Denmark, perhaps from imported raw material. There are several precedents for the same source causing salmonellosis outbreaks in different parts of the world. The strain responsible for the Danish outbreak will therefore be compared with strains from recent outbreaks in the USA and Australia. Although there do not appear to be outbreaks in our neighbouring countries, comparison of the Danish strain with strains from different EU countries has also been initiated. Finally, the interview studies are being continued, as well as the intensive bacteriological investigations of animals and foods in Denmark. The outbreak can be followed on www.ssi.dk/tim. (P. Gerner-Smidt, Dept. of GI Infections, J. Neimann, Danish Zoonosis Centre)

NOTIFICATION FORMS

In future form 1515 for individual notifications and form 1510 for gonorrhoea and syphilis should be ordered from Dafolo A/S.

NEW EDITOR OF EPI-NEWS

The new editor is Acting Senior Medical Officer Susanne Samuelsson. (Dept. of Epidemiology)

12 September 2001

Patients with diagnosed infections from streptococci isolated from blood and CSF

2nd quarter of 2001 compared with the same period of the two previous years

		2nd quarter 2001				2nd quarter	
		< 2 yrs	2-59 yrs	60 yrs +	Total	1999	2000
April	S. pneumoniae	7	44	70	121	79	77
	Gr. A strep.	-	5	4	9	13	14
	Gr. C strep.	-	-	-	-	-	1
	Gr. G strep.	-	2	3	5	6	5
May	S. pneumoniae	2	29	40	71	68	65
	Gr. A strep.	-	4	4	8	5	13
	Gr. C strep.	-	1	-	1	1	3
	Gr. G strep.	-	2	3	5	5	7
June	S. pneumoniae	8	30	43	81	61	52
	Gr. A strep.	1	9	8	18	12	9
	Gr. C strep.	-	-	2	2	-	4
	Gr. G strep.	-	1	13	14	10	10
2nd quarter	S. pneumoniae	17	103	153	273	208	194
	Gr. A strep.	1	18	16	35	30	36
	Gr. C strep.	-	1	2	3	1	8
	Gr. G strep.	-	5	19	24	21	22

(Streptococcus Unit)