Parental history of gastric or duodenal ulcer and prevalence of *Helicobacter pylori* infection in preschool children: population based study

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Helicobacter pylori infection is present in almost all patients with duodenal ulcers and 80-90% of patients with gastric ulcers,¹ whereas the prevalence of infection among young adults without a history of ulcer is fairly low in Western countries.² To investigate the importance of transmission from parent to child we assessed the relation between a parent's history of gastric or duodenal ulcer and infection with *H pylori* in his or her offspring in a large population of preschool children.

Subjects, methods, and results

A cross sectional study was carried out among 1201 preschool children living in Ulm, a city of about 100 000 inhabitants located in southern Germany. The children had a medical examination before starting school in 1996. Details of the study design are reported elsewhere.³ In brief, a urea breath test using carbon-13 was conducted to determine whether the children had an active infection of *H pylori*. One to two weeks before their child's examination a standardised questionnaire was sent to the parents to ascertain whether they had had a gastric or duodenal ulcer diagnosed by a doctor. The questionnaire also included detailed information on other potential risk factors for *H pylori* infection, such as housing conditions, family demographics, and socioeconomic factors. The prevalence of *H pylori* infection in the children of parents with a history of gastric or duodenal ulcer was compared with that in children whose parents had no such history. Multiple logistic regression was used to adjust for known or suspected risk factors that might confound the results.⁴

Overall, 945 of the 1201 children participated in the study (response rate 79%). To minimise false negative results from the urea breath test, 82 children were excluded because they had received antibiotic treatment within the preceding 4 weeks. A history of gastric or duodenal ulcer was reported in 22 mothers and 28 fathers (table). Overall, 118 (14%) of the 863 children were infected with *H pylori*. Among children whose mothers had a history of gastric or duodenal ulcer the prevalence of infection was more than double that among those whose mothers had no such history (odds ratio 2.4 (95% confidence interval 0.9 to 6.4)). The association was significant after adjustment for known or suspected risk factors of infection by multiple logistic regression (11.7 (3.8 to 36.2); $P < 0.0001$) (table). No significant association was seen between a paternal history of ulcer and active infection in children.

Comment

The difference between the prevalence of infection in children whose mothers are infected with *H pylori* and that in children whose mothers are not infected is

Prevalence of *Helicobacter pylori* infection in 863 preschool children according to parental history of duodenal or gastric ulcer

History of ulcer in parent	No of children	No (%) infected with <i>H pylori</i>	Odds ratio (95% CI)	
			Crude	Adjusted*
Mother:				
No	841	112 (13)	1.0	1.0
Yes	22	6 (27)	2.4 (0.9 to 6.4)	11.7 (3.8 to 36.2)
P value for comparison			0.07	<0.0001
Father:				
No	835	113 (14)	1.0	1.0
Yes	28	5 (18)	1.4 (0.5 to 3.7)	1.6 (0.4 to 5.5)
P value for comparison			0.51	0.49

*Adjusted for nationality, mother's education, father's education, housing density, birth order, history of breast feeding, attendance at nursery, antibiotic treatment, and history of ulcer in the other parent.

likely to be even larger than the difference shown by the mothers with a history of ulcer in this study.

In theory, the relation between a parent's history of ulcer and *H pylori* infection in his or her offspring may be explained by several mechanisms, including common environmental or genetic factors that influence susceptibility to infection.⁵ However, these factors imply that a history of ulcer in the mother or father will be similarly associated with infection in a child. As mothers typically have closer contact with their children, a more plausible explanation for the observed patterns would be transmission between mother and infant. Our results would also be consistent with the hypotheses that the transmission may be influenced by the presence of ulcer or that *H pylori* strains causing peptic ulcer may be more infective than other strains.

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