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The Role of Tonsillectomy in the Prevention of Helicobacter Pylori Infection

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ABSTRACT

The incidence of Helicobacter pylori infection varies globally and depends on the socioeconomic situation of a location. In the territory of Croatia, the incidence rate among the populace is 40-50% in persons with normal gastroscopic findings, whereas it is increased in persons with the pathohistological finding of the ulcus disease[1]. This study examines the potential preventive role of tonsillectomy with regard to H. pylori infection in later stages of life. The survey was conducted on a sample of 115 examinees (63 male, 52 female), aged between 19 and 86. The survey included examinees that underwent esophagogastroscopy at the Institute of Gastroenterology of the University Hospital Centre Osijek based on indication by a gastroenterology specialist. The survey has shown that of the total of 115 examinees, 28 of them had been tonsillectomised, and 87 had not been tonsillectomised. In the examinees who had not been subjected to tonsillectomy, positive H. pylori result was found in 63.2%, and 53.6% of those who had been tonsillectomised at a young age were positive to H.pylori. The results have shown that H. pylori infection was equally represented in all age groups, and the rate varies at 52.9 – 64.8%. Hence, the final conclusion was reached that tonsillectomy has no preventive role with regard to H.pylori infection.

Key words: *Helicobacter pylori, tonsillectomy, child, adult*

Introduction

The incidence of Helicobacter infection varies globally and depends on the socioeconomic situation of a location. The prevalence in developed countries is 30-40% and 80-90% in undeveloped countries[1]. In the territory of Croatia, the incidence among the populace is 30-40%, in persons with normal gastroscopic findings, while in patients with duodenal ulcer the infection is present in 90% of cases. In patients with stomach ulcer, it is provable in 70% of cases[2]. Helicobacter pylori is a microaerophilic, gram-negative bacterium, whose main habitat is the stomach mucous. Undoubtedly, the infection with Helicobacter pylori is in related to the occurrence of chronic gastritis, and this chronic infection may lead to the development of ulcers and cancers. The presence of H. pylori in the stomach mucous can be proven by invasive and non-invasive methods. There is a high degree of correlation between antibodies in the serum and the histological findings [3]. Despite the fact that Helicobacter pylori is among the most frequent infections in the world, its transfer mode has not yet been completely clarified[4].

According to some surveys, the mouth cavity is one of the habitats of Helicobacter pylori from where infection may spread[4]. This is supported by the fact that the finding of Helicobacter pylori by PCR method (Polymerase Chain Reaction) has been proven in dental plaque and saliva[1]. In persons who have simultaneously suffered from chronic sinusitis and had H. pylori stomach infection, H. pylori presence was found in the maxillary sinus tissue[5]. There are studies that have detected its presence on the nasal mucous membrane and nasal polyps[1]. According to the research, the presence of H. pylori in the nose and /or sinuses is the result of gastroesophageal reflux[5]. This bacterium is also frequently found in asymptomatic examinees that had normal endoscopic stomach findings in spite of a histologically proven gastritis[5]. In this study, to prove the potential preventive role of tonsillectomy with regard to H. pylori infection, a sample of population of widely varying ages was examined, in order to discover the actual role of tonsillectomy in the prevention of H. pylori infection in later stages of life.

Material and Methods

Research was conducted on a sample of 115 examinees (63 male, 52 female), aged between 19 and 86, the average

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age being 51.65. The survey included examinees who underwent esophagogastroscopy at the Institute of Gastroenterology of the University Hospital Centre Osijek based on indications by a gastroenterology specialist of the same institution during a period of one month, from 15 January to 15 February 2010. At each gastroscopy, a biopsy of the stomach tissue was performed and treated using the Giemsa staining method at the Institute of Pathology of the Clinical Hospital Centre Osijek. Information on tonsillectomy was obtained by insight in medical documentation.

Statistical analysis

Data analysis was focused on testing the hypotheses that two properties of elements of basic sets are mutually independent (hi-square test for testing the hypothesis of the independence of the contingency table data). They were considered statistically significant in the analysis of the dependency between properties confirmed at level $p<0.05$.

As data analysis support, software tools SPSS Statistics 17.0 and Statistica 8.0 were used.

Results

The research has shown that of the total of 115 examinees, 28 were tonsillectomised, and 87 of them were not. According to the pathohistological findings, 60.9% examinees had positive findings on H. pylori, and 39.1% examinees had H. pylori negative findings. Of the total of 28 examinees who were tonsillectomised, 15 examinees or 53.6% had positive findings on H. Pylori, while 13 of them or 46.4% had negative findings on H. pylori. Of the total number of the examinees who were not tonsillectomised, H. pylori result was positive in 63.2% and negative in 36.8% cases. The results have shown an equal representation of H. pylori infection in examinees who were tonsillectimised and in those who did not undergo tonsillectomy (p=0.363, Table 1). The research has shown an equal representation of H. Pylori infection in male (60.3%) and female (61.5%) sex (p=0.894, Table 2), and the non-existence of the dependence between tonsillectomy and H. pylori infection among males (p=0.565, Table 3), while among females there is a statistical relation (p=0.048, Table 4), but it is hard to ascertain any real connection due to the small number of examinees. Taking into the account the age of the respondents, we divided them into three age groups with approximately equal numbers of respondents. It was found that among different there age groups was on equal presence of H. pylori infection (p=0.522, Table 5), and study the connection in representation H. pylori infection with data on tonsillectomy in the same population that did not prove that tonsillectomy has a preventive role in H. pylori infection (Table 6, Table 7, Table 8).

Discussion and Conclusion

This retrospective – prospective study, unlike many that have explored the possibility that tonsils represent

TABLE 1
THE PRESENTATION OF THE DISTRIBUTION OF RESPONDENTS DEPENDING ON H.PYLORI STATUS AND ANAMNESTIC DATA OF TONSILLECTOMY

Tonsillectomy	H. pylori		Total
	negative	positive	
No	32	55	87
	(36.8%)	(63.2%)	(100.0%)
Yes	13	15	28
	(46.4%)	(53.6%)	(100.0%)
Total	45	70	115
	(39.1%)	(60.9%)	(100.0%)

TABLE 2
THE PRESENTATION OF THE DISTRIBUTION OF PATIENTS DEPENDING ON SEX AND H.PYLORI INFECTION

Sex	H. pylori		Total
	negative	positive	
Male	25	38	63
	(39.7%)	(60.3%)	(100.0%)
Female	20	32	52
	(38.5%)	(61.5%)	(100.0%)
Total	45	70	115
	(39.1%)	(60.9%)	(100.0%)

TABLE 3
THE PRESENTATION OF THE DISTRIBUTION OF RESPONDENTS WITH RESPECT TO THE MALES AND H. PYLORI INFECTION

Tonsillectomy	H. pylori		Total
	negative	positive	
No	20	28	48
	(41.7%)	(58.3%)	(100.0%)
Yes	5	10	15
	(33.3%)	(66.7%)	(100.0%)
Total	25	38	63
	(39.7%)	(60.3%)	(100.0%)

TABLE 4
THE PRESENTATION OF THE DISTRIBUTION OF RESPONDENTS WITH RESPECT TO THE FEMALES AND H. PYLORI INFECTION

Tonsillectomy	H. pylori		Total
	negative	positive	
No	12	27	39
	(30.8%)	(69.2%)	(100.0%)
Yes	8	5	13
	(61.5%)	(38.5%)	(100.0%)
Total	20	32	52
	(38.5%)	(61.5%)	(100.0%)

TABLE 5
THE PRESENTATION OF THE DISTRIBUTION OF PATIENTS WITH H. PYLORI INFECTION DEPENDING ON AGE GROUPS

Age groups	H. pylori		Total
	negative	positive	
19-39	10 (37.0%)	17 (63.0%)	27 (100.0%)
40-59	19 (35.2%)	35 (64.8%)	54 (100.0%)
60-86	16 (47.1%)	18 (52.9%)	34 (100.0%)
Total	45 (39.1%)	70 (60.9%)	115 (100.0%)

TABLE 6
THE DISTRIBUTION OF PATIENTS AGED BETWEEN 19 AND 39 ACCORDING TO THE CHARACTERISTICS OF H. PYLORI AND TONSILLECTOMY

Tonsillectomy	H. pylori		Total
	negative	positive	
No	7 (31.8%)	15 (68.2%)	22 (100.0%)
Yes	3 (60.0%)	2 (40.0%)	5 (100.0%)
Total	10 (37.0%)	17 (63.0%)	27 (100.0%)

TABLE 7
THE DISTRIBUTION OF PATIENTS AGED BETWEEN 40 AND 59 ACCORDING TO THE CHARACTERISTICS OF H. PYLORI AND TONSILLECTOMY

Tonsillectomy	H. pylori		Total
	negative	positive	
No	13 (34.2%)	25 (65.8%)	38 (100.0%)
Yes	6 (37.5%)	10 (62.5%)	16 (100.0%)
Total	19 (35.2%)	35 (64.8%)	54 (100.0%)

TABLE 8
THE DISTRIBUTION OF PATIENTS AGED BETWEEN 60 AND 86 ACCORDING TO THE CHARACTERISTICS OF H. PYLORI AND TONSILLECTOMY

Tonsillectomy	H. pylori		Total
	negative	positive	
No	12 (44.4%)	15 (55.6%)	27 (100.0%)
Yes	4 (57.1%)	3 (42.9%)	7 (100.0%)
Total	16 (47.1%)	18 (52.9%)	34 (100.0%)

one of the reservoirs of H. pylori infection and are the location of their entrance into the gastrointestinal tract, did not concern with direct detection of H. pylori on the tonsils, but, taking into account the anamnestic information of tonsillectomy, on insight into the real situation of how tonsils removal at a young age affects the prevention of H. pylori infection in later stages of life was gained. Thus set forth, the study enabled a population of a wide range of age groups to be encompassed, and not only of childhood age, when tonsillectomy is performed in most cases, and has shown that in different stages of life H. pylori infection is equally represented, and by studying the connection of H. pylori infection presence with the tonsillectomy information in the same population, no evidence has been found that tonsillectomy has a preventive role in H. pylori infection.

The premise of this study has discarded the remarks of the previous studies since they were carried out using adenotonsillar tissue of children, who typically have a lower incidence of H. pylori infection. Unlike the majority of previous studies which have established that tonsillectomy does not diminish the risk of H. pylori infection, in this study we have, by simultaneous endoscopic examination and pathohistological analysis, proven, i.e. excluded the possibility of the existence of actual H. pylori infection in the stomach tissue.

Histological analysis by Giemsa staining belongs to highly sensitive and specific methods in detecting H. pylori, except that detection of H. pylori was performed on the gastric tissue, and thus rejected the objection that the methods used in the detection of H. pylori in gastric tissue, were not adequate for adenotonsillar tissue due to differences in tissue pH. The differences in research results could be the consequence of the fact that in the detection of H. pylori in adenotonsillar tissue methods that are in practice used to detect the same bacterium in the stomach tissue[6] were applied. The high percentage of false-positives may have resulted from the fact that there is a difference in the pH-value between the adenotonsillar and stomach tissue[8]. The research studies have used adenotonsillar tissue which in most cases belonged to a child population, and H. pylori infection in childhood is rarer than in adulthood[6,7]. Yilmaz et al. did not get any positive results using the rapid urease test, while in the same patients anti-H. pylori IgG antibody was positive in 56%[8] and Eyigar et al. did not prove the presence of H. pylori in adenotonsillar tissue using PCR, a rapid urease test (CLO test) was positive in 3 (5.5%) of 55 tissue samples[1]

The only study that has investigated the relationship between tonsillectomy with future H. pylori infection, while detecting H. pylori in gastric tissue spent Minocha et al. and they use the rapid urease test (CLO test) for detection of H. pylori[7]. Studies have confirmed that, unlike other methods for detecting H. pylori, rapid urease test is a quick method of orientation of the existinginfection with H. pylori in contrast to the histological methods[9]. The rapid urease test is not in fact a specific test for H. pylori, but for urease produced microorganisms. We can conclude that the data obtained from this and previous studies state

adenotonsillar tissue is not an extra gastric reservoir for H. pylori infection.

Future surveys should base their objectives on finding the factors which condition that in certain persons, despite them having undergone antibiotic treatment of H. pylori eradication, a persistent, recurring H. pylori infection develops and reflects in the atrophy at tissue level and, finally, in dysplasia and metaplasia of the stomach tissue.

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ULOGA TONZILEKTOMIJE U PREVENCIJI INFEKCIJE S HELICOBACTER PYLORI

SAŽETAK

Učestalost Helicobacter infekcije je različita diljem svijeta i ovisi o socijalno-ekonomskom položaju sredine. U našim je krajevima učestalost u populaciji 40-50 % u osoba s urednim gastroskopskim nalazom, dok se povećava kod osoba sa patohistološkim nalazom ulkusne bolesti. U ovoj studiji ispituje se moguća preventivna uloga tonzilektomije, na infekciju H. pylori u kasnijoj životnoj dobi. Istraživanje je provedeno na uzorku od 115 ispitanika (63 muškarca, 52 žene), u dobi od 19 do 86 godine. U istraživanje su uključeni ispitanici koji su pristupili ezofagogastroskopiji na Zavodu za gastroenterologiju KBC Osijek na temelju indikacije specijalista gastroenterologa. Istraživanje je pokazalo da je od ukupno 115 ispitanika bilo tonzilektomirano 28, a 87 ispitanika nije tonzilektomirano. Kod ispitanika koji nisu tonzilektomirani, pozitivan nalaz na H. pylori imalo je 63,2 % ispitanika, a 53,6 % onih koji u mladosti tonzilektomirani je pozitivno na H. pylori. Rezultati su pokazali jednaku zastupljenost infekcije H. pylori u svim dobnim skupinama, a ona iznosi između 52,9 – 64,8 %. Time se na posljetku došlo do zaključka da tonzilektomija nema preventivnu ulogu kod infekcije s H. pylori.