

Helicobacter pylori infection and comorbidity - our diagnostic and therapeutic modalities

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Abstract

The discovery of *Helicobacter pylori* (Hp) bacteria and causal relationship of *Helicobacter pylori* infection with the origin of chronic gastritis, stomach and duodenal ulcer and stomach cancer represents an epochal event of the new age. The goal of the study is to examine the incidence of *Helicobacter pylori* infection of stomach and prove the connection between *Helicobacter pylori* infection and stomach and duodenum diseases (non-ulcer gastropathy, stomach ulcer, and duodenal bulb ulcer and stomach cancer). The study encompassed 250 randomly selected examinees of both genders and different age categories. All the examinees were subjected to quick urease test (QUT) from antral biopsate and stomach corpus acquired by upper gastrointestinal endoscopy with standard forceps. Hp positive examinees were subjected to one of four therapy protocols for eradication of Hp. The acquired data were treated with application of descriptive statistical methods (SV, SD, Min, MAX) and analytical statistical methods (Student t test, Hi quadrat test, Kruskal-Walish test, Mann-Whitney U-test, Wilcoxon test, ANOVA variant analysis, Spearman and Pearson correlation). 250 examinees tested by quick urease test (QUT), 54% were positive and 46% were negative ($p > 0.05$). The proportion by genders between QUT positives and QUT negatives was approximately the same ($p > 0.05$).

Non-ulcer gastropathy was a dominant finding with both QUT negatives (92.2%) and QUT positives (77%) ($p < 0.01$). The highest rate of eradication of *Helicobacter pylori* infection was shown by protocols B and D (75%), then protocol A (71%) and protocol C (57.2%) ($p > 0.05$). Quick urease test (QUT) which requires upper digestive endoscopy and biopsy of stomach epithelia samples represents a minimum of invasive diagnostics of *Helicobacter pylori* infection and a minimum of confirmation of eradication in our conditions. Therapeutic protocols B and D have

Helicobacter pylori infekcija i udružene bolesti – naši dijagnostički i terapijski modaliteti

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Apstrakt

Otkriće bakterije *Helicobacter pylori* (Hp) i uzročne povezanosti *Helicobacter pylori* infekcije sa nastankom hroničnog gastritisa, želudačnog i duodenalnog ulkusa kao i karcinoma želuca predstavlja epohalni događaj novijeg doba. Cilj studije je da ispita učestalost *Helicobacter pylori* infekcije želuca i dokaže povezanost *Helicobacter pylori* infekcije i bolesti želuca i duodenuma. (ne-ulkusna gastropatija, ulkus želuca, ulkus bulbusa duodenuma i karcinom želuca). Studijom je obuhvaćeno 250 ispitanika oba pola, različitih starosnih kategorija izabranih slučajnim uzorkom. Svi ispitanici su bili podvrgnuti brzom ureaza testu (BUT) iz biopsata antruma i korpusa želuca dobijenih gornjom gastrointestinalnom endoskopijom standardnim forcepsom. Hp pozitivni ispitanici su bili podvrgnuti jednom od četiri terapijska protokola za eradicaciju Hp. Dobijeni podaci obrađeni su primenom deskriptivnih statističkih metoda (SV, SD, Min, MAX) i analitičkih statističkih metoda. (Studentov T test, Hi kvadrat test, Kruskal-Walish test, Mann-Whitney U test, Wilcoxon test, analiza varijanse ANOVA, Spermanova i Personova koleracija). Od 250 ispitanika testiranih brzim ureaza testom (BUT) 54% je bilo pozitivnih i 46% negativnih ($p > 0,05$). Odnos polova BUT pozitivnih i BUT negativnih je bio približno isti. ($p > 0,05$).

Neulkusna gastropatija je bio dominantni nalaz kako kod BUT negativnih (92,2%) tako i kod BUT pozitivnih (77%) ($p < 0,01$). Najveću eradicaciju *Helicobacter pylori* infekcije pokazali su protokoli B i D (75%), zatim protokol A (71,5%) i protokol C (57,2%) ($p > 0,05$). Brzi ureaza test (BUT) za koji je potrebna gornja digestivna endoskopija i biopsija uzoraka sluznice želuca predstavlja minimum invazivne dijagnostike *Helicobacter pylori* infekcije i minimum potvrđivanja eradikacije u našim uslovima. Terapijski protokoli B i D

shown the highest rate of success in eradication with our patients.

Keywords: upper gastrointestinal endoscopy, quick urease test (QUT), therapeutic protocol

su pokazali najveći eradikacioni uspeh kod naših bolesnika.

Ključne reči: identifikacija, ekshumacija, posmrtni ostaci, Kosovo i Metohija

Introduction

The discovery of *Helicobacter pylori* infection (Hp)¹⁻⁴ and causal relationship of *Helicobacter pylori* infection with origin of chronic gastritis, stomach and duodenal ulcer as well as stomach cancer represents an epochal event of the new age⁵⁻¹¹. Quick urease test (QUT) represents a minimum of invasive diagnostics of *Helicobacter pylori* infection and a minimum of eradication confirmation in our conditions¹²⁻¹⁵.

Associated diseases (non-ulcer gastropathy, gastric ulcer, duodenal ulcer and stomach cancer) were proved by endoscopic examination of stomach and duodenum as well as histo-pathological analysis of taken samples⁶. Quick urease test was performed with biopate samples from each antrum and corpus for infection diagnosis. For checking the success rate of eradication therapy with samples from each antrum and corpus, *Helicobacter pylori* was designated as the most significant factor in etiopathogenesis of chronic gastritis^{5,9}. *Helicobacter pylori* infection is present with 90% of patients with chronic gastritis (CHG)⁹, with 90-95% of patients with duodenal ulcer (DU)⁶ and with 70-80% of patients with gastric ulcer (GU)¹⁰. Numerous clinical studies note abundant therapeutic protocols for eradication of *Helicobacter pylori* infection with different quantities of medications and different durations of treatment¹⁶⁻²⁰.

The therapy which meets clinical needs is the one with at least 80% success rate in eradication. According to the Maastricht 2 Consensus, recommendation for first-choice eradication therapy is seven-day application of proton pump inhibitor with two antibiotics in different combinations.

Material and methods

The study encompassed 250 random examinees of both genders. The study was prospective and performed from January 2010 to December 2010. It was performed in the cabinet for digestive endoscopy of gastroenterology department of General Hospital in Novi Pazar.

All the examinees were subjected to quick urease test from biopates of antrum and stomach corpus, acquired by upper gastrointestinal endoscopy by standard forceps. *Helicobacter* positive examinees (135 examinees – 69 men and 66 women) were subjected to one of four therapeutic protocols for *Helicobacter pylori* eradication.

Therapeutic protocols:

(A) – Azithromycin (3 days by 500 mg) + Metronidazol (7 days 3 x 400 mg) + Proton pump inhibitor (IPP) (7 days Omeprazol 2 x 20 mg or Pantoprazol 2 x 40 mg),

(B) – Amoxicilin (7 days 2x 1 gr) + Metronidazol (7 days 3 x 400 mg) + IPP (7 days Omeprazol 2 x 20 mg or Pantoprazol 2 x 40 mg),

(C) – Azithromycin (3 days x 500 mg) + Amoxicilin (7 days 2x 1 gr) + IPP (7 days Omeprazol 2 x 20 mg or Pantoprazol 2 x 40 mg),

(D) – Claritromycin (7 days 2 x 500 mg) + Amoxicilin (7 days 2x 1 gr) + IPP (7 days Omeprazol 2 x 20 mg or Pantoprazol 2 x 40 mg),

After completing therapeutic treatment, we performed a control quick urease test with 82 examinees. The acquired results were treated by application of descriptive statistical methods and analytical statistical methods.

The results have been shown in histogram and linear graph.

Results

We can see in Table.1 that with 250 examinees tested by quick urease test (QUT), 54% were *Helicobacter pylori* positive and 46% were negative. Also, one can see that gender proportion of QUT positive and QUT negative examinees was approximately the same. No statistically significant difference was found ($p>0.05$) in number of QUT positive or negative examinees. Also, gender distribution of QUT positive or negative examinees was not significantly different ($p>0.05$).

	Number (%)	Gender	
		Men Number (%)	Women Number (%)
QUT negative	115 (46)	60 (52.2)	55 (47.8)
QUT positive	135 (54)	69 (51.1)	66 (48.9)

Table 1. Results of quick urease test (QUT)

Table 2. shows presence of diagnoses in percents, depending on results of quick urease test (QUT). We can see from the table that non-ulcer gastropathy was a dominant finding with both QUT positive (92.2%) and negative (77%) examinees. Statistical analysis of data shown in Table 2. gave a highly statistically significant difference ($p<0.01$). Also, a highly statistically significant ($p<0.01$) correlation of diagnoses of presence/absence of *Helicobacter pylori* infection was found.

	Non-ulcer gastropathy	Ulcus b. duodeni	Ulcus ventriculi	Ca ventriculi
QUT negative	92.2%	5.2%	1.7%	0.9%
QUT positive	77%	17.8%	3.7%	1.5%

Table 2. Prevalence of diagnoses depending on QUT results

Diagram 1. shows the finding of local QUT, depending on applied therapeutic protocol. We can see from the graph that protocols B and D had the highest rates of eradication (75% each), then A protocol (71.5%) and the C protocol had the lowest rate of 57.2%. The highest percentage of non-eradicated *Helicobacter pylori* examinees was in the C protocol (42.8%). Therapeutic protocols were not significantly different in eradication degrees after applied therapies ($p>0.05$).

A statistically highly significant difference was found between QUT findings before applying the therapy and control QUT after it, in all therapeutic protocols ($p<0.001$), except in the C protocol, which shows a statistically significant difference ($p<0.05$).

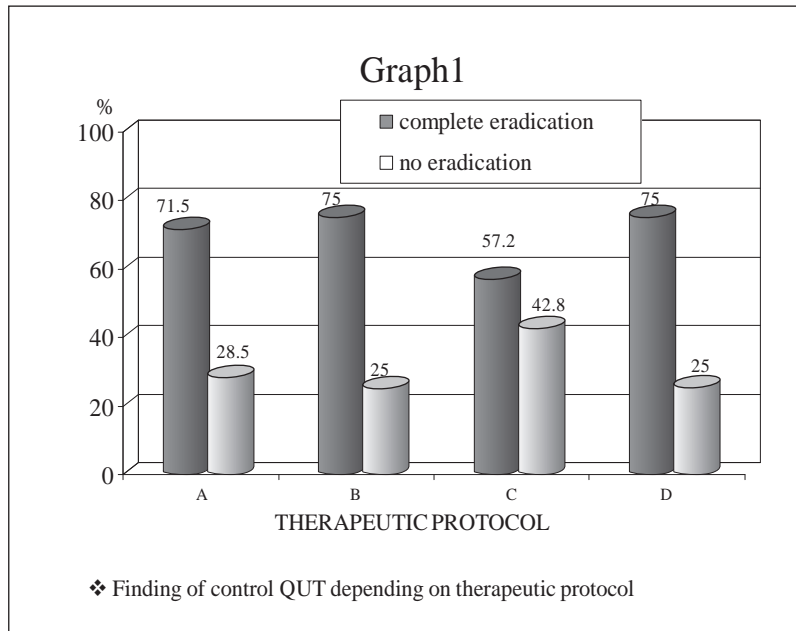


Diagram 1. Finding of control QUT depending on therapeutic protocol

Diagram 2. gives a comparative depiction of eradication degree of *Helicobacter pylori* depending on applied therapeutic protocols. We can see from the graph that the D protocol achieved the best results in eradication in non-ulcer gastropathy (76.4%) and that the A protocol achieved slightly weaker results (75%). In case of duodenal ulcer, the best degree of eradication was shown by the B protocol (100%), while the C protocol gave slightly weaker results (83.3%).

There was no eradication of *Helicobacter pylori* for gastric ulcer present with the application of the C therapeutic protocol (the only place it was present). Complete eradication of *Helicobacter pylori* with stomach cancer present was shown by the A and D protocols (the only places where it was prevalent).

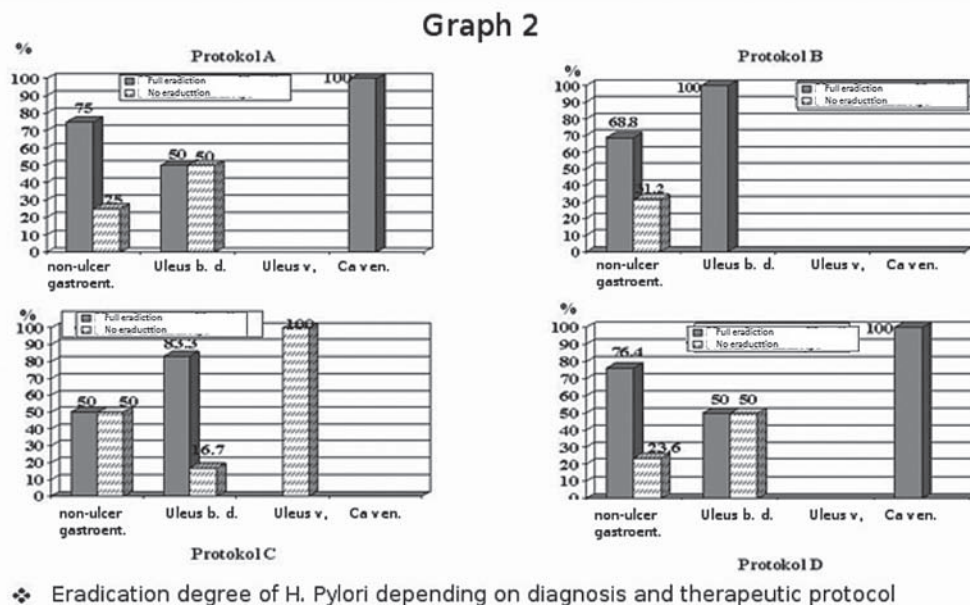


Diagram 2. Eradication degree of H. Pylori depending on diagnosis and therapeutic protocol

Discussion

Helicobacter pylori infection has become more and more frequent in both the world and our local population and has an epidemic character. Studies by domestic authors show that on a specimen of 1,317 examinees, *Helicobacter pylori* infection was found in about 60% examinees¹²⁻¹⁵. Prevalent in our paper, *Helicobacter pylori* infections in bioptical material acquired by quick urease test at gastrointestinal department of the Novi Pazar General Hospital accounted for 54% of people of all ages. On our material, regardless of gender, the highest incidence of *Helicobacter pylori* positive examinees was with ages 41-50, while prevalence on *Helicobacter pylori* positive sample was: with non-ulcer gastropathy – 77%; with duodenal ulcer – 17.8%; with gastric ulcer – 3.7%; with gastric cancer – 1.5%. In case of stomach localization, the incidence is the same with men and women, while duodenal ulcer is twice more frequent with men than women. Also, the incidence of stomach ulcer grows with age^{10,21}.

In our research of *Helicobacter pylori* positive patients, duodenal ulcer is more prevalent with men (24.6%) and so is stomach cancer (2.9%), while stomach ulcer was more frequent with women (4.5%). Non-ulcer gastropathy is most present in the fifth and sixth decades of life, duodenal ulcer in the fifth decade and gastric ulcer was not recorded in the second, third and fourth decades of life, while stomach cancer was 100% present in the sixth decade of life.

Epidemiological studies conducted in many countries show close connection between stomach cancer and *Helicobacter pylori* infection^{11, 12}. Thus the Eurogast study showed a statistically significant difference of these two entities. The results of our research speak in favor of the above mentioned, whereas *Helicobacter pylori* infection was present with all examinees with stomach cancer, in both anatomical regions.

A great number of therapeutic protocols for eradication of *Helicobacter pylori* infection are mentioned in literature¹⁶⁻²¹. Also, applied therapeutic protocols show different effectiveness in eradication of *Helicobacter pylori*. Thus, Caselli and his associates achieved eradication rate of 93.3% with the application of a protocol made of: Azithromicin+ Metronidazol + Lansoprazol 17. In our study, the highest eradication rates were shown by the D protocol (IPP+Kla+Am) and B protocol (IPP+Am+Met). Thus acquired results are in accord with data from both foreign and domestic literature¹⁸⁻²⁰.

In our study, the lowest eradication rate was shown by the C protocol (57.1%). As mentioned in methodology, success rate of eradication of *Helicobacter pylori* infection in our study was checked by control QUT after 4-6 weeks of medication. These results combined show that the highest eradication rate was achieved by application of B and D protocols (75%), while the degree was lower with the A protocol (71.5%). The lowest eradication rate was with the C protocol (57.2%). However, the above mentioned difference in eradication degree did not show statistical significance. In our work, the combination of Azithromicin + Amoxyl + IPP showed low rate of eradication so we deem this combination least preferable^{18, 20}.

In the end, we have to point that the study is not finished; it is to be continued on a larger sample, where we hope to find a statistically more valid sample and higher accuracy of results regarding success of particular therapeutic protocols.

Conclusion

Quick urease test (QUT), an invasive test which requires upper digestive endoscopy and biopsy of epithelia samples from antrum and stomach, represents a minimum of invasive diagnostics of *Helicobacter pylori* in our environment. Control QUT can be successfully used to check eradication rate of applied therapeutic protocols. Non-ulcer gastropathy was dominant finding with both QUT negative and positive examinees.

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