

Persistent eradication of *Helicobacter pylori* after systemic politherapy associated with periodontal pockets treatment with metronidazole and calcium sulphate

A. TARULLO, M. TATTOLI*, R. CAGIANO*

* Dept. of Pharmacology and Human Physiology – Pharmacology Section – Medical School, University of Bari (Italy)

Abstract. – The sensitivity of *H. Pylori* to antibiotic treatment is well known. Politherapy (omeprazole or pantoprazole or ranitidine, amoxicillin and/or azithromycin and/or clarithromycin, metronidazole and bismuth citrate) notably changed the percentage of *H. pylori* eradication but rarely resolute. Periodontal pockets treatment with topic metronidazole, calcium sulphate and potassium sulphate resulted active against bacteria included in periodontal pockets leading to a long-term *H. pylori* eradication (two years follow-up).

Key Words:

Helicobacter pylori, Periodontal pocket, Metronidazole, Calcium sulphate, Potassium sulphate, Antibiotic politherapy.

Introduction

In the last century, methods of surgical periodontal treatment ameliorated oral health increasing more and more the percentage of success. The usual care is based on the suppression of the growth of non-specific plaque reducing the overgrowth of bacterial plaques causing periodontal disease, and thus reducing disease risk. The main feature of this approach to care is the removal of inflamed gingival tissue around the teeth to reduce periodontal pocket depth, thereby facilitating plaque removal by the dentist and/or by the patient at home.

Over the last 30 years, it has been recognized that periodontal disease is caused by specific bacteria and that specific antimicrobial agents can reduce or eliminate the infection causing periodontal attachment loss

while the surgical therapy reduces the result of the periodontal infection. With the increasing attention to evidence-based models for prevention and treatment, increasing attention will be channelled into effective preventive and treatment methods. Recent observations hypothesize that periodontal, respiratory, cardiac, head and neck infections¹, could be potential causes of specific systemic pathologies such as cardiovascular disease, arguing a preventive treatment of these infections. Actually, general and local antimicrobial treatments could be responsively and effectively used to control reinfections and thus avoiding associated health problems.

Some authors suggested that the human oral cavity could be a possible reservoir for *H. pylori*^{2,3}. On the contrary, other authors reported that colonization and growth of *H. pylori* were difficult in the oral cavity⁴.

The aim of the present study was to determine if periodontal pocket antiseptic treatment, associated with systemic antibiotic politherapy, could lower the percentage of *H. pylori* reappearance.

Materials and Methods

The authors carried out a pilot study in a dentist's room with the aim of testing the efficacy and tolerability of the following experimental procedures:

Drugs

– 25% metronidazole dental gel (Elizol, Cabon); each gram of metronidazole gel contains: metronidazole benzoate mg 402

(corresponding to mg 250 of metronidazole) dissolved in monoleic glycerol and sesame oil.

- Soft paste containing calcium sulphate hemidrate and potassium sulphate 4% dissolved in saline (Surgiplaster, Classimplant).

Patients

A large number of patients were observed for a widespread parodontopathy with moderate to severe degree.

The patients admitted to our study were recruited among those displaying concomitant gastric disturbances appeared two or three weeks after the second cycle of antibiotic politherapy and resulting positive to the check for *Helicobacter pylori* after gastric endoscopic biopsy.

All patients, which gave informed written consent prior to enrolment into our study, were randomly divided into placebo and drug groups.

Patients admitted to our study = 24

Patients admitted to the control group = 10

Male/Female = 7/3

Patients admitted to the treated group = 14

Male/female = 10/4

Monitoring visits of both groups were regularly scheduled at months 1, 3, 6, 9, 12, 15, 18, 21 and 24.

The experimental procedure consisted in superficial and deep ablation of the dental tartar plaques, toilette of periodontal pockets with tepid hypertonic solution and subsequent application of metronidazole gel 25% (Elizol, Cabon) followed by the application of a paste containing calcium sulphate hemidrate and potassium sulphate 4% dissolved in saline (Surgiplaster, Classimplant) to create an effective barrier against bacteria.

Both experimental groups were further invited to mouthwash, at home, with clorexidine digluconate 0.12% solution and clean their teeth with tooth-paste containing Triclosan⁵.

Local applications in the control group followed the same procedure of the treated group except for the presence of the drugs. Only mouthwash and teeth cleaning at home remained unchanged for both experimental groups.

Statistical Analysis

For each scheduled monitoring visit, comparisons between groups were performed using a two-tails chi-square (χ^2) test with Yates' correction.

Results

At two years follow-up, all patients of the treated group admitted to our study (14 patients) didn't show any presence of *Helicobacter pylori* after endoscopy procedure and related gastric signs and symptoms ($p < 0.001$). Periodic odontostomatologic inspections also resulted negative.

On the contrary, in control group, gastric symptoms were detected in 80% (8/10) of the patients over different monitoring periods.

During the different monitoring periods, statistical difference was achieved starting from month 15 over all remaining periods (Figure 1).

In particular, at month 15, the percentage of patients treated with placebo experienced gastric disturbances ($p < 0.002$) was 50% and progressively increased reaching the 80% at 24 months ($p < 0.001$).

Discussion

These results suggest that, in a two-years follow-up, the systemic antibiotic politherapy is not able to significantly reduce the percentage of *H. pylori* reappearance while, in association with antiseptic treatment of periodontal pockets, drastically reduce *H. pylori* reappearance. These data then confirm that human oral cavity could be a possible reservoir for *H. pylori*, although some authors reported that colonization and growth of *H. pylori* were difficult in this site⁴.

The authors then concluded that periodontal pockets could be considered as a natural reservoir for *Helicobacter pylori* as periodontal treatment, associated to systemic poli-antibiotic therapy, resulted in a negative biopsy for *Helicobacter pylori* and in a persistent disappearance of the related gastric disturbances over a two-year observational period.

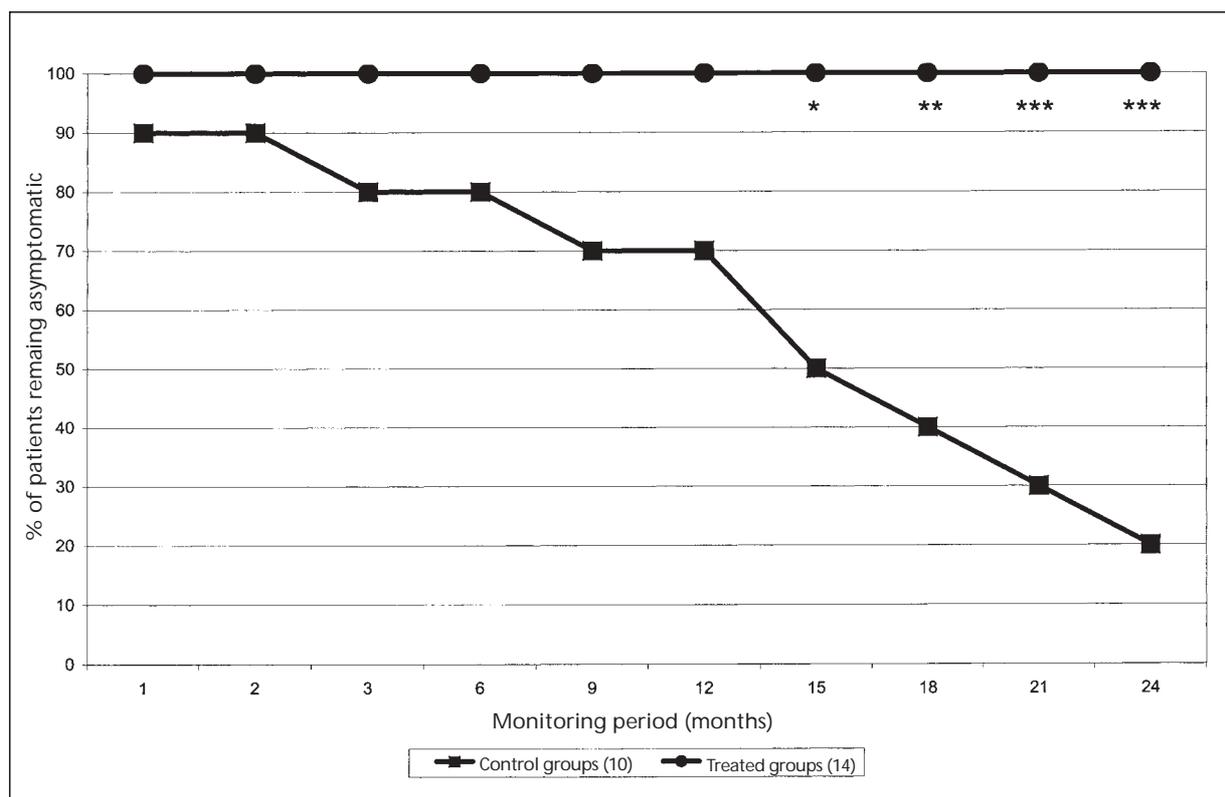


Figure 1. Percentage of patients remaining asymptomatic during the observational 24-months period. * $p < 0.02$; ** $p < 0.005$; *** $p < 0.001$ (two-tails χ^2 test with Yates' correction).

References

- 1) GENDRON R, GRENIER D AND LF MAHEU-ROBERT. The oral cavity as a reservoir of bacterial pathogens for focal infections, *Microbes and Infections* 2000, 2: 897-906.
- 2) DOWSETT SA, ARCHILA L, SEGRETO VA, et al., *Helicobacter pylori* infection in indigenous families of Central America: serostatus and oral and fingernail carriage. *J Clin Microbiol* 1999, 37: 2456-2460.
- 3) FERGUSON DAJ, LI C, PATEL NR, et al. Isolation of *Helicobacter pylori* from saliva. *J Clin Microbiol* 1993, 31: 2802-2804.
- 4) OKUDA K, ISHIHARA K, MIURA T, et al. *Helicobacter pylori* may have only a transient presence in the oral cavity and on the surface of oral cancer. *Microbiol Immunol* 2000, 44: 385-388.
- 5) ROSLING B, DAHLEN G, VOLPE A, et al. Effect of triclosan on the subgingival microbiota of periodontitis – Susceptible subjects. *J Clin Periodontol* 1997; 24: 881-887.