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Secondary antibiotic resistance, correlation between genotypic and phenotypic methods and treatment in helicobacter pylori infected patients: A retrospective study

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Aim of this study was to evaluate the secondary resistance in Helicobacter pylori (Hp) infected patients who had failed a first-line therapy and to compare the genotypic tests performed directly on gastric samples with phenotypic tests performed on culture media. The eradication rate of patients treated with Bismuth Quadruple Therapy (BQT) was also evaluated.

A total of 80 positive specimens were retrospectively examined. Antibiotic susceptibility testing of Hp strains was performed by E-test, whereas a molecular method was used for detecting the mutations involved in clarithromycin (CLA) and levofloxacin (LEV) resistance. High resistance levels to metronidazole (MZ) and CLA (61.6% and 35%, respectively) and worrying resistance levels to LEV (15%) were found phenotypically. Multiple resistance to two or three antibiotics was observed as well. The combination MZ+TE (tetracycline) recommended in BQT was detected just in one strain (1.25%) and resulted as being much inferior to all other combinations including MZ, CLA and LEV. The polymorphism A2143G on clarithromycin 23S rRNA gene was found in 34/80 (42.5%) isolates including 10 mixed infections (29%) which indicated the simultaneous presence of resistant and susceptible strains in the stomach antrum , whereas 28/80 (35%) strains were resistant phenotypically (difference not statistically significant, $p>0.05$). In contrast levofloxacin resistance was 30% by PCR and 15% by E-test (difference statistically significant, $p < 0.05$).

The genetic methods turned out to be better than the phenotypic techniques especially in the absence of live bacteria or for identifying mixed infections that may lead to a resistance underestimation or in contaminated cultures. The BQT (PPI+Bismuth+MZ+TE) eradication rate was effective (90%). This therapy has proven high efficacy despite MZ resistance also bypassing the quinolone resistance and overcoming the CLA-resistance. The knowledge of clarithromycin and levofloxacin resistance is crucial to establish an appropriate therapy in different geographical areas.

Biography

Maria Teresa Mascellino graduated at the age of 25 years in Rome during the period of 1980 and specialized in Clinical Microbiology at Sapienza University of Rome (Italy). She works as an Aggregate Professor in the Department of Public Health and Infectious Diseases at Policlinico Umberto I° of Rome. She was responsible for the Simple Operative Unit "Microbiological Analyses in the immunocompromised hosts". She has published about 100 papers in reputed journals and has been serving as an editorial board member of repute for several scientific journals. She is Editor of four books and authors of four chapters. She is referee for many important International Journals and for the Research Projects of the Ministry of University and Scientific Research (MIUR) of Rome other than referee at Fund for the control of Infectious Diseases (RFCD) of Hong Kong for the revisions of Research Projects. She was charged for teaching to foreign students.

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