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METRONIDAZOLE RESISTANCE OF HELICOBACTER PYLORI IN BAHRAIN

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Resistance of Helicobacter pylori (HP) to metronidazole (MTZ) is a growing medical problem in various parts of the world. There has been no reports on this problem from our geographic region and the aim of this study is to evaluate the percentage of MTZ resistance among isolates in Bahrain. Out of 72 isolated strains 34 (47.2%) were resistant to MTZ. The resistance among males and females was 51.2% and 41.9%, respectively (no significant difference X2 = 1.14). The high prevalence of HP resistance of MTZ in Bahrain should be considered before choosing the therapy for HP. Bahrain Med Bull 1995;17:

Helicobacter pylori(HP) are a Gram-negative micro-aerophillie bacterium with a world-wide distribution in the gastric mucosa of man[1]. The organism is associated with active chronic gastritis and is considered a risk factor in peptic ulcer disease and gastric cancer[2]. Finding the best treatment combination to eradicate HP has been the goal of many researches[3].

Metronidazole (MTZ) was used in the treatment of HP infection. The most known therapy of HP infection is the triple therapy combining amoxicillin, MTZ and bismuth compounds. Therapeutic failures have been attributed to drug resistance especially to MTZ[3,4]. The rate of eradication of HP was higher (93%) among patients with MTZ sensitive HP, while in patients in whom eradication failed; pretreatment MTZ resistant strains were subsequently isolated[5].

A Multicentre European Survey on prevalence of MTZ resistance in HP emphasized the importance of monitoring drug resistance of HP on local basis[6]. This study provides information on the percentage of resistance to MTZ in HP isolates in Bahrain.

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METHODS

Seventy-two HP strains were isolated from the gastric mucosa of seventy-two patients undergoing upper gastro-intestinal endoscopy at the Gastroenterology Unit of Salmaniya Medical Centre in Bahrain.

The biopsies were cultured on blood and chocolate agar plates, and were incubated for up to five days at 37°C under microaerophilic conditions. Colonies of HP were identified by their characteristic colonial morphology, Gram Stain, and positive catalase, oxidase and urease reactions.

The isolated strains were tested for pre-treatment susceptibility to MTZ using the Disk Diffusion Method[7]. Disks containing 5 ug MTZ were used on blood agar HP cultured plates. The plates were incubated under microaerophilic conditions for three days before the results were read. The diameter of the zone of growth inhibition was measured. Isolates which had zone diameter < 15 mm were considered MTZ resistant[7].

RESULTS

Thirty-four of the seventy-two strains isolated, (47.2%) were found resistant to MTZ. Table 1 shows the MTZ sensitivity according to sex. The resistance among males and females was 51.2% (21 out of 41) and 41.9% (13 out of 31) respectively (non significant, x2 = 1.14).

Table 1
Results of Metronidazole Sensitivity
in HP isolates according to sex

	MTZ resistant HP		MTZ sensitive HP		Total	
	No.	(%)	No.	(%)	No	(%)
Males	21	51.2	20	48.8	41	57
Females	13	41.9	18	58.1	31	43
Total	34	47.2	38	52.8	72	100

x2 = 1.14 (non significant difference)

DISCUSSION

In studying MTZ susceptibility of HP isolates we used Disk Diffusion Method following Decross et al 1993 who recommended it as a result of a comparative study of disk, broth and agar dilution methods[7]. They concluded that the Disk Diffusion Method is practical, accurate and clinically applicable.

The percentage of HP resistance to MTZ in our area is considered moderate (47.2%). Different percentages of resistance have been reported from different parts of the world. High percentages of resistance were reported in Zaire (84%)Italy (73%) and Brazil (64.7%)[4,8,9]. In Europe a Multicentre Survey, from 11 European countries, reported a percentage of resistance ranging from 7% to 49%, with levels of resistance higher in Africans and other non-Caucasian subjects than in natives from European countries[6]. The highest percentage of resistance was reported in Ireland and Belgium (33.87% and 26% respectively) and the lowest in the Netherlands (6.4%)[8,12,13]. The percentage in the United Kingdom was 20%[10,11]. In Asia, it was reported from an urban region in Malaysia that the primary resistant rate of HP to MTZ was 10.8% while in the United Arab Emirates it was observed that 10 out of 16 HP isolates were resistant to MTZ[14,15].

With regard to the sex-related sensitivity, we found no significant difference between males and females. Some authors reported similar results whilst others reported that females have higher MTZ resistant rates than males[4,6,8,12,13,14.]

CONCLUSION

It is necessary to test HP susceptibility before treatment in order to select the most effective therapy to avoid the failure of HP eradication.

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