Helicobacter Pylori treatment regimen and the extent of antibiotics effectiveness in AL- Gamhoria teaching Hospital and five private clinics in Aden-Yemen, 2017

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Abstract

Studies about H pylori infection in Aden governorate are still scarce. Thus, our objectives in this study are to investigate and to evaluate the incidence rate of H. pylori infection, risk factors, efficacy of therapy and drug resistance.

A cross sectional study was conducted for 325 patients who attended in Al-Gamhuria Teaching Hospital and five private clinics, in Aden governorate, during the period March to September - 2017.

Gastric mucosa biopsy samples were obtained from 50 patients who had undergone upper gastrointestinal endoscopy for culture and sensitivity test for H. pylori for susceptibility to four antibiotics (clarithromycin, amoxicillin, metronidazole, and levofloxacin). During this study, we found that (70.8%) females and (29.2%) males are suffering from H. pylori infection. The maximum number of cases (41.2%) were found between the age group 21-30 years. 59.4% of them received (PPI+ Clarithromycin+ Amoxicillin or metronidazole), while 40.6% received (Levofloxacin containing triple therapy) for 10-14 days.

25.2% have been completely improved, and 3.4% haven't, while 30.2% have recurrent, 41.2% not return for farther follow up. All risk factors are in higher percentage.

The commonest drug resistant for Amoxicillin was 30%, Clarithromycin 26% and metronidazole was 24%., while 20% for Levofloxacin.

Conclusion:- To eradicate H. pylori successfully, the whole society authorities and systems should cooperate together as one team because this is multifactor problem, including host, environmental, socioeconomic, educational and inappropriate treatment.

Keywords: Antibiotics, H. Pylor, Drug resistance, Aden.

Introduction:-

In order to prevent the disease progression, it is important to concentrate our efforts on the eradication of H. pylori, by using the gold standard therapy, first line (Triple regimen), combining of (PPI) with two antibiotics (clarithromycin and amoxicillin or metronidazole.[15,4]

But the misuse and overuse of antimicrobials recently lead to drug resistance, which explains the reason behind triple therapy failure. [9]

So, the appearance of antibiotic resistance which lead to decrease the eradication rate (70-85%)[9,12], is the main reason for treatment failure. [13,14] Therefore, many patients require second-line therapy. [10]

The management of *H. pylori has* become a challenge for physicians due to increase in an antimicrobial resistance[12] so, Levofloxacin-containing triple therapy for 7-10 days has been used as another option in Europe . [8]

In our consideration, prophylaxis is better than treatment, specially in our country where people are very poor and the treatment regime contains many drugs and cost a lot of many. In addition in the last years infection with H. Pylori increased too much due to deterioration of socioeconomic, bad sanitary conditions and low cultural education.

Objectives:

The objective of present study is to investigate and to evaluate the incidence rate of H. pylori infection, risk factors, efficacy of therapy and drug resistance, in Aden Governorate.

Materials and Methods:

A cross-sectional study was performed in AL-Gamhuoria Teaching Hospital and five private clinics from March –September 2017, in Aden Governorate.

Data were gathered by useding direct interview with patients, who were randomly selected. The total number of patients in this study was 325.

A questionnaire containing qusions about patients history such as (age starting from 10 years' old Up to more than 50 years old, sex, sanitary condition, risk factors)was prepared.

Anther questionnaires that deals to drugs (type of drug, dosage, duration, and effectiveness of therapy) was also used. All patients received first line therapy for10-14days.

Gastric mucosa biopsy samples obtained from 50 patients who had undergone upper gastrointestinal endoscopy were cultured for H. pylori, and susceptibility to four antibiotics (clarithromycin, amoxicillin, metronidazole, and levofloxacin).

Data were processed using computer. Percentage was used as summary measure and the results are presented in tables (1-6). Data analysis was obtained by using the SPSS (18 version) program.

Ethical Consideration**:** To perform this study we obtained the agreement of all patients.

Results:-

Table 1: Distribution of patients according to Age group

Age	Frequency	%
10-20 years	38	11.7
21-30years	134	41.2
31-40 years	60	18.5
41-50 years	40	12.3
More than 50 years	53	16.3
Total	325	100

The highest percentage of age is 21-30 years (41.2%)

Table 2:- D*istribution of patients according to sex*

Sex	Frequency	%
Males	95	29.2
Females	230	70.8
Totals	325.5	100

The female sex shows the commonest percentage (70.8%)

Table 3:Distribution of patients according to drug uses

First line therapy			Frequency	%
PPI	Clarithromycin	Amoxicillin or metronidazole	193	59.4
PPI	Clarithromycin	Levofloxacin	132	40.6
Total			325	100

The highest percent (59.4%)was with PPI and Amoxicillin, or Metronidazole

Table 4:- The effectiveness of antibiotic therapy

Improvement	Frequency	%
Improved	82	25.2
Not Improved	11	3.4
Recurrent	98	30.2
Patients not return	134	41.2
Total	325	100

This Table Shows the highest percent 41.2%who haven't return for further follow up, while 30.2% of patients have recurrent

Table 5: Incidence of patients according to risk factors

Risk factor	Yes	No	Total
Spicy food	68.3%	31.7%	100%
Emotional stress	75.4%	24.6%	100%
Family history	66.5%	33.5%	100%
Overcrowded	71.2%	28.2%	100%
Eat fast food	73.2	26.8	100%
Bad sanitary conditions	62.1	47.9	100%

All risk factors are in higher percentage
Note: each factor is calculated from the total number of cases (325).

Discussion of Pylori:-

If H.pylori infection untreated during childhood, it can persist lifelong, due to risk factors which reduce immunity and keep the causative organism persist for longer time. Even if individuals living in the same country, there are different factors that play major role in H.pylori infection, such as ethnicity, place of birth, socioeconomic class and environmental, cultural and educational factors.[19]

From the results that shown in Table 1, the commonest age group was between 21-30 years (41.2 %), most of them are students in university who have no time for regular eating and most of their food are fast food. The students are also always under stress of studying process. In some studies, was found that H-pylori infection more common above 40 years.[19]

Females are commonly infected than males 70.8% as seen in Table 2,and this is mainly because the female in our country are continually under stress due to heavy load of big family, deterioration of socioeconomic condition, people always live under stress, fear and many problems, especially after war. Also the total number of females in this study is two thirds, while that of males was one third.

Previous studies, showed no significant difference in H. pylori prevalence according to gender. The male-to-female ratio is in concordance with the study done by Tarkhashvili et al. [22], and Shokrzadeh et al., [20] but these results are in contrast with a study done by Kaore et al., [11] which showed higher prevalence in male gender.

The triple regimen combination of proton pump inhibitor (PPI) with two antibiotics (Clarithromycin+ Amoxicillin or metronidazole), is currently considered the gold standard therapy for eradication of Pylori[4,15]

The increasing in antibiotics resistance affected inversely eradication rate,[13,14] to reached up to (70-85%).[15].

Table 3 shows that 59.4% of patients have used first line therapy including proton pump inhibitor (PPI) and two antibiotics (Clarithromycin+ amoxicillin or metronidazole), for 10-14 days, while 40.6% have used first line levofloxacin-containing triple therapy for 10-14 days, which have been use as another option in Europe.[8]

Inappropriate treatment, host , environmental , socioeconomic , cultural and educational factors all these play a major role in the falling rate of eradication therapy.[16] .

Table 4 showed 25.2% of patients are improved by using the therapy, while 3.4% are still have the same complain, 30.2% have recurrent symptoms may be due to poor compliance, lake of emphasis on eradication therapy or may be due to drug-related adverse effect ,41.2% are never return again for further follow-up, these last groups may be improved, but not return due to too far living condition, or may not be improved, and the patients feel depressed because he or she needs to improve so fast, this is due to socioeconomic and sociocultural education condition in our country. These types of patients formed the source of drug resistance, and treatment failure, and make a challenge for physician to have persuade the patients to follow the treatment regimen completely. [1].

All patients in this study show high risk factors including emotional stress75.4%, fast food73,2%, 71.2% overcrowded families, this facilitate the transformed the diseases from patient to healthy one, family history66.5 and bad sanitary condition 62.1% as seen in Table 5.

The eradication rate is influenced by multiple factors include mechanism of resistance in H. pylori ,hosts, environmental and other factors that are not completely understood. [1,3,7,21,23,24]

Culture and sensitivity test for antimicrobial drugs for 50 patients were done, the results are the following: 30% are resistance to amoxicillin ,and 26% to clarithromycin the essential factor for amoxicillin and clarithromycin resistance is previous consumption of these antibiotics during all childhood period, where the children are frequently sick, by UPRI.

European studies, performed at the past 6 years intervals reported that *H. pylori* resistance was decreased from 36.65% in 2009 to 24.38% in 2014. In Asian regions, a surprising clarithromycin resistance frequency was reported from India (58.8%) and China (46.54%), whereas the lowest rate was discovered in Malaysia (2.4%). [2,6,16].

Twenty four percent was the resistance to metronidazole, as well as metronidazole has commonly been used in our country for aemobiasis , giardiasis , genitourinary tract infection which are common infections. [4,15,17] .

Researchers reported that the rate of treatment failure is more than 20% with triple therapy in which metronidazole is the drug of choice ,also H.pylori resistance to metronidazole is the chief solitary reason responsible for management failure.[5,18,]

In our study, twenty percent of patients are resistance to levofloxacin in our study, as levofloxacin become widely used, in eradication therapy. A high rate of drug resistance has arisen against it.

A study in China showed that the levofloxacin resistance rate was 20.6%, due to the dramatic increase in clarithromycin resistance. Levofloxacin, a wide spectrum quinolone, has been used as

an alternative of clarithromycin in some regimens. But the frequent use of quinolones for urinary tract infections has increased the incidence of *H. pylori* resistance in the world. [6]

Conclusion

To eradicate H. pylori successfully, the whole society authorities and systems should cooperate together as a team. Physicians should not focus only on treatment regimen, patient education and elevate level of awareness is one important role of physician as well, besides, individual treatment plan is required according to patients' varieties and medical history. The educational information are crucial to ensure treatment compliance and successful eradication of H. pylori. Sanitation and hygiene procedures applied by the governmental and scioeconomic sectors play a major role to reduce H. Pylori infection, social support system will encourage the patient to follow the treatment and help to prevent further infection or relapse.

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علاج جرثومة المعدة ومدى فعالية المضادات الحيوية في العيادات الخارجية لمستشفى الجمهورية التعليمي وخمس عيادات خاصه بأمراض الجهاز الهضمي محافظة عدن 2017

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الملخص

تهدف هذه الدراسة لمعرفة مدى انتشار مرض جرثومة المعدة، والعوامل المساعدة لذلك، ومدى فعالية المضادات الحيوية في علاجها. وقد تمت دراسة 325 مريضاً تم اختيارهم بشكل عشوائي من العيادات الخارجية لمستشفى الجمهورية التعليمي وخمس عيادات خاصة في المدة من مارس إلى سبتمبر 2017م.
كما تم أخذ عينات من غشاء المعدة لخمسين مريضاً في أثناء عمل المنظار لفحصها لمعرفة مدى فعالية المضادات الحيوية، ومدى مقاومة البكتيريا لها.
وكانت النتائج كما يأتي:
1-عدد النساء المصابات بالمرض (70.8%) بينما عدد الرجال (29.2%)، حيث كانت الفئة العمرية الأكثر اصابة بين (30-21سنة) بنسبة (59.4%).
2-كانت نسبة المرضى الذين تحسنوا تماماً من استخدام المضادات الحيوية (25.2%)، بينما (3.4%) لم يتحسنوا، ولا يزال البعض يعاني من تكرار وجود الأعراض وهم (30.2%)، وهناك عدد كبير من المرضى لم يعودوا لمتابعة العلاج (41.2%).
3-كانت نسبة مقاومة البكتيريا للمضادات الحيوية كالتالي:(30%) مقاومة للاموكساسيلين (Amoxicillin)، (26%) مقاومة للكلاريثرومايسن (Clarithromycin)، (24%) للمترندازول (Metronidazole)، (20%) مقاومة لليفوفلوكساسلين (Levofloxacillin).
ونظراً لوجود عوامل عديدة متداخلة ومترابطة ببعضها البعض أدت إلى زيادة انتشار المرض، وأيضا كثرة استعمال المضادات الحيوية وبدون وجود وصفة طبية، وللحد من انتشار المرض، والعمل على التخلص منه يتطلب من الجميع العمل المتواصل والجاد كلا حسب موقعه وقدرته، المريض، الطبيب، وزارة لصحه، والعاملون في الخدمات الصحية وجميع افرد المجتمع.

الكلمات المفتاحية: جرثومة المعدة، مقاومة البكتيريا، المضادات الحيوية، مدينة عدن.