THROMBOCYTOPENIA IN CASES OF HELICOBACTER PYLORI INFECTION

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ABSTRACT

Objective: To observe thrombocytopenia in cases of *Helicobacter pylori* infection.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: Department of Hematology, Armed Forces Institute of Pathology, Rawalpindi Pakistan, from Feb to Aug 2016.

Methodology: A total of 150 patients who were all tested positive for *H. pylori* antigen were enrolled in the study. The patients were taken from the outdoor of medical OPD who came with the symptoms of gastritis, heart burn, pain and indigestion. But none of them were bleeding. Sample size was calculated by WHO calculator. Non probability consequetive sampling technique was used. They were from either gender and their age varies from eighteen to seventy years. Exclusion criteria was strictly followed. None of these patients were suffering from HCV, HIV which can lead to thrombocytopenia. They were enrolled in my study before the beginning of any treatment for their *H. pylori*. Previously they were also not on any type of drugs that are known for causing thrombocytopenia. Their *H. pylori* infection was diagnosed by antigen testing in stool and platelet count was measured in blood by automated haematological sysmex analyzer in all patients. Platelet count was also confirmed by manual count on peripheral blood film examination. Data was entered and analyzed by using SPSS version 17 and presented as percentages and frequencies. Post stratification chi-square test was applied. A *p*-value less than 0.05 was considered significant.

Results: Out of 150, thrombocytopenia was found in 17 (11.3%) patients. Frequency of thrombocytopenia was significantly higher in older age groups. Twelve out of seventeen patients having thrombocytopenia were having ages between fifty sixth to seven teeth year. The lowest platelet count observed is 60 in this group. The range of platelet count varies between 60-95 in these seventeen patients. Their *p*-value was equal to 0.001, which was statistically significant. No significant difference was observed in male and female groups.

Conclusions: Patients with *H. pylori* infection show thrombocytopenia. Most of these patients are in their older age group.

Keywords: Helicobacter Pylori, Platelets, Thrombocytopenia.

INTRODUCTION

Helicobacter pylori a gram negative bacterium, is an infectious cause of peptic ulcer. It plays its part in certain conditions such as carcinoma of stomach and autoimmune diseases for example immune thrombocytopenic purpura ITP. This is strongly favoured by the results of the studies which show increase in the platelet count after *H. pylori* was eradicated. Those patients who show positive response after treatment also have decrease in antibodies against platelets in serum[1]. *H. pylori* has cag A factor in its structure. This is responsible for making anti cag A antibodies. These antibodies work against platelets antigens and cause thrombocytopenia[2]. *H. pylori* with cag A make antibodies by continuous immune stimulation due to similarity in molecular makeup of cag A and platelet antigens[3]. *H. pylori* colonizes stomach lining of fifty percent population of the world[4]. Thrombocytopenia due to *H. pylori* is grouped into secondary ITP. ITP can be primary which has no obvious cause or can be secondary which has known eitiology[5]. Secondary ITP is usually due to *H. pylori*, and different viruses like hepatitis C and HIV. Although the mechanism is not clear. Different infections produce oxidative stress. This leads to rapid phagocytosis of plate-

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lets[6] leading to thrombocytopenia. This is also explained in another study in which IgG antibody to *H. pylori* are produced. Then *H.pylori* and these IgG antibodies induce platelet activation and movement of P Selectin to platelet surface. Finally interaction of *H. pylori*, IgG antibody and *P Selectin* leads to platelet aggregation and apoptosis[7]. Platelets interface with leucocytes and start an inflammatory process. This results in making of complexes of platelet-granulocyte or platelet-platelet. This process leads to fall in the number of platelets in patient infected with *H. pylori*. Different genetic makeup of *H. pylori* is responsible for unevenness of results in patient. This explains that why in some patients thrombocytopenia is relieved after treatment while not in others[8]. Various studies that are available give contradictory results so there is need for more experimental ventures to reach to a final conclusion as it would be great benefit to patients having thrombocytopenia because of *H. pylori*, as its eradication is simple.

METHODOLOGY

This descriptive cross sectional study was done in department of Haematology, Armed Forces Institute of Pathology (AFIP) Rawalpindi, from Feb to Aug 2016. A total of one hundred and fifty patients positive for *H. pylori* antigen were enrolled in the study. Sample size was calculated by WHO calculator. Its confidence level was 95%. The absolute precision required was 8%. Non probability consecuetive sampling technique was used. Their antigen positivity for *H. pylori* was demonstrated in their stool specimen. The test was done on Certest Helicobacter pylori antigen kit. It is a noninvasive and easy to do test directly measuring the antigen in stool and not the antibodies. The positive test was observed as two lines, one red and one green by naked eye appearing on the kit after the aditton of stool. The blood sample of these one fifty patients were taken in EDTA tube. The blood was than sucked into fully automated haematological analyzer SYSMEX KX-21. Complete blood count card was than autogenerated by the analyzer. Patients who have platelet count below hundred were selected.

Platelet count was than confirmed by manual count on peripheral blood film examination. Exclusion criteria was followed too. Patients with thrombocytopenia having causes other than *H. pylori* were not included. These include people with autoimmune disorders, hepatitis B and C infection, HIV and other viral infections. Permission from ethical committee was taken. Informed consent was taken from all the patients. SPSS-17 was used to enter and analyze the data. It was expressed in percentages and frequencies. Post-stratification chi-square test was applied. A *p*-value <0.05 was considered significant.

RESULTS

Total one hundred and fifty patients of both genders who tested positive for *H. pylori* antigen were enrolled in the study. Their age varies between eighteen to seventy years. Ninety three were male and fifty seven were female patients. Thrombocytopenia was found in 17 (11.3%) patients. Frequency of thrombocytopenia was significantly higher in older age groups (*p*=0.001). Twelve out of seventeen patients lie between age

Table-I: Frequency of the thrombocytopenia in the study sample.

Thrombocytopenia	n (%)
Present	17 (11.3)
Absent	133 (88.7)
Total	150 (100.0)

Table-II: Frequency of the thrombocytopenia (age based stratification).

Age Groups (Years)	Thrombocytopenia Present n (%)	Absent n (%)	Total	*p*-value Chi-square
18-35	2 (10.0)	18 (90.0)	20 (100)	
36-55	3 (3.6)	81 (96.4)	84 (100.0)	0.001
56-70	12 (26.1)	34 (73.9)	46 (100)	
Total	17 (11.3)	133 (88.7)	150(100)	

group of fifty six to seventy years. The lowest platelet count that was observed was 60. The range of platelet count was from 60-95 in these thrombocytopenic patients. No significant difference was observed among male and females groups (*p*=0.807). Among seventeen *H. pylori* positive patients eleven were males and six were

females, with positive antigen test in stool. In different disease duration groups of less than six or more than six months no difference was observed as regard to positivity of *H. pylori* (*p*-value >0.05).

DISCUSSION

The studies so far published have conflicting results. This study was planned to explore the burden of thrombocytopenia in *H. pylori* infected patients in Pakistani population.

Most of the reported literature is on patients with idiopathic thrombocytopenia and frequency of *H. pylori* infection being measured in those patients. The information about incidence of thrombocytopenia in people affecting from *H. pylori* is very scarc. This project shows that platelets counts are lower in those patients whose stomach are contaminated with *H. pylori.* In a similar study Raza *et al*[9] selected four hundred patients. Amongst them 200 were positive for *H. pylori* and 200 were normal. He compared platelet counts in these two groups. Histopathological study of stomach biopsies confirmed the presence of *H. pylori*. The results were similar in the period of (35.89 ± 10.73 and 34.93 ± 11.31 years respectively. Their *p*-value came out to be 0.3845. The platelet count of twenty individuals in them were low than $1.5 \times 10^6/mm^3$. Other 35 individuals (17.5%) had counts between 1.5 and $2 \times 10^6/mm^3$. In their study the percentage of thrombocytopenia due to *H. pylori* infection is 10% whereas in this study it is 11%. It is also observed in this study that low platelet counts were mostly in older population positive for *H. pylori*. Raza, *et al* concluded that all twenty subjects who have lower platelet count had their ages >45 years. Amongst them whose platelet counts were very much less were in their sixties or seventies. A new project highlighted that platelet count falls as the age advances. This reduction is recognized as 35% in males and by 25% in females. The counts were compared with their respective number of platelets in their childhood[10]. Thus, age of any healthy individual is the basic element affecting their platelet count. Fifty alaskan kids who

have *H. pylori* infection were observed. Thirty nine percent of them showed increase in platelet count after treatment for *H. pylori*[11].

Another experimental project was led by Umit and Umit[12]. He worked upon two parameters. One is mean platelet count and the second one is mean platelet volume. He compared both the infected and noninfected individuals for these two parameters. MPV was higher in *H. Pylori* positive group. The volume of platelet varies between 8.9 ± 1.3 in infected patients. However healthy people have smaller platelets as compared to the diseased group. Their volume varies between 8.23 ± 0.94. The *p*-value came out to be <0.001. This increase in MPV is due to young large platelets produced as a result of compensation of destroying platelets. Experimental studies showed that eradication of *H. pylori* give benefit to the patient. In one of our locally conducted study in Pakistan platelet count improve in forty percent patients who are suffering from *H.Pylori* infestation after they were eradicated of the organism[13]. In another study the platelet counts were checked after eradication of *H. Pylori* at 3-6 months. The responders show increase in count and were statistically significant in number[14].

CONCLUSION

Individuals whose stomach have been colonized with *H. Pylori* have lower platelet counts. These thrombocytopenic patients also show association with their age as well. Majority of them lies in their older age group bracket.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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