Original Article

Frequency of Helicobacter Pylori in Ischemic Stroke

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ABSTRACT

OBJECTIVE: To find out the frequency of helicobacter pylori antibodies (IgG) among cases of ischemic stroke.
STUDY DESIGN: Cross-sectional study.
PLACE AND DURATION: Medical Unit-II, Liaquat University Hospital Jamshoro/Hyderabad, from July 2009 to June 2010.
METHODOLOGY: Helicobacter pylori (H.pylori) antibodies (IgG) on ELISA and color doppler ultrasound of carotid arteries were performed in CT Scan confirmed cases of ischemic stroke along with other routine investigations. A pre-designed proforma was used to record the data.
RESULTS: Among 150 CT scan confirmed ischemic stroke cases, 110 (73.3%) were males and 40 (26.7%) were females (2.7:1). The H.pylori antibodies (IgG) were present in 121 (80.7%) cases among which males were 99 (66%) and females were (14.7%).
CONCLUSION: H.pylori antibodies (IgG) were present in very high proportion (80.7%) among cases of ischemic stroke.

KEY WORDS: ischemic stroke, Helicobacter Pylori Anti bodies, Atherosclerosis, CT scan brain.

INTRODUCTION

Helicobacter Pylori or H.pylori is a notorious gram negative spiral shaped bacillus, normally resides in deep layers of stomach, locally it causes chronic gastritis and peptic ulcer disease while distally it is implicated as a risk factor morbid ischemic stroke (ischemic stroke) and ischemic heart disease by development/acceleration of atherosclerosis of small and large arteries ,. Other risk factors for atherosclerosis are hypertension, diabetes mellitus, dyslipidemia, smoking, homocysteinurea, increased serum level of c -reactive protein (CRP).

The exact mechanism of endothelial injury or inflammation, leading to atherosclerosis is not known but different hypothesis have been proposed by various studies world wide, such as oxidative modifications, molecular mimicry, bacterium-platelet interaction and even direct plaque modification.

With respect to plaque modification, the most persuasive evidence supporting the direct involvement of H.pylori in atherosclerosis is identification of H.pylori DNA by polymerase chain reaction (PCR) in atherosclerosis plaques.

Other supporting studies regarding H.pylori involvement are; reduced angiogenesis, increased apoptosis, reduced proliferation, increased trans-endothelial migration of polymorphonuclear cells ,,,.

There are different genotypes of H.pylori and only Cytotoxin-Associated-Gene A (CAG-A) protein positive virulent strains are associated with ischemic coronary disease and ischemic stroke globally.

In our set up the facility of the test that can find out the virulent gene protein containing H.pylori is not available, therefore, we have only found the frequency of H.pylori antibodies (IgG) on ELISA along with Color Doppler of both carotid arteries for the evidence of atherosclerosis in all CT scan confirmed ischemic stroke patients. The purpose of this study was to find out the status of H.pylori among ischemic stroke cases in our setup to highlight any need of advance and larger studies in this regard.

METHODOLOGY

This cross-sectional study was carried out in Medical Unit-II, Liaquat University Hospital Jamshoro/ Hyderabad from July 2009 to June 2010. Adult CT scan confirmed patients of ischemic stroke were selected by non-probability purposive sampling technique. Patients with history of peptic ulcer disease, using proton pump inhibitors, refused to consent for study, and presenting with intra-cerebral bleeding, space occupying lesion or sub-arachnoids hemorrhage were not included in the study.

After obtaining the informed consent from the subjects, H.pylori antibodies (IgG) on ELISA (sensitivity 96.0%, specificity 97.4) and color doppler ultrasound of carotid arteries (sensitivity 81.5%, specificity 98.9%) were performed along with other routine investigations that included CT scan brain (plain), blood glucose (fasting and random), lipid profile, ECG, x-ray chest (PA view), complete blood count, and urine DR.

RESULTS

Among **150** selected adult cases of CT scan confirmed ischemic stroke, males were 110 (73.3%) and females were 40 (26.7%). Male to female ratio was 2.7:1.

Helicobacter Pylori antibodies IgG were found in 121 (80.7%). Out of these males were 99 (66%) and that of females were 22 (14.7%).

Frequency of other major risk factors in H.pylori IgG positive male and female ischemic stroke patients is detailed in **Table I.** Among 121 cases of H.pylori IgG positive ischemic stroke patients, the finding of color Doppler of carotid arteries were suggestive of atherosclerosis in 68(56.2%).

TABLE I: FREQUENCY OF OTHER MAJOR RISK FACTORS IN H.PYLORI IGG +VE ISCHEMIC STROKE PATIENTS (n= 150)

Risk factors	Male	Female	Total
Hypertension	60 (40%)	18 (12%)	78 (52 %)
Diabetes Mellitus	22 (14.67%)	15 (10%)	37 (24.7 %)
Smoking	16(10.67%)	01(0.63%)	17(11.3 %)
Dyslipidemia	14 (9.33%)	04(2.67%)	18 (12 %)
Total	112 (74.67%)	38 (25.33%)	150 (100%)

DISCUSSION

The local work on H.pylori in ischemic stroke patients is found insufficient but out side the country, significant work have been done. Heuschmann et al, in their population-based case-control study found higher risk of ischemic stroke in H.Pylori positive patients (adjusted odds ratio, 3.31; 95% CI. 1.15 to 9.56). In present study we also found the high proportion of H.pylori positive in ischemic stroke patients.

Piettroiusti et al, made three groups of the patients i.e.; Group-A patients with large vessel stroke (n =138), Group-B with cardioembolic stroke (n =61) and Group-C as a healthy control patients (n =151). They found the prevalence of H.Pylori (71%) in Group-A, 63.9% in Group-B and 70.2% in Group-C along with high prevalence of CAG-A positive virulent strains in Group-A (42.8%) (OR 3.04, 95% CI 1.43 TO 6.49). Our proportion also seems close to theirs.

Ponzetto et al, in their study of found a high prevalence of H.pylori infection among ischemic stroke as compared to a control group [64/80 (80%) versus 190/320 (59.4%)]. Mayr et al, in their prospective study also found 80% seropositivity of a virulent strain H. Pylori in Bruneck population. Moayyedi et al, in their study found significantly more H.Pylori positive individuals on ELISA in ischemic stroke as compared to the control group of individuals [274/398 (69%)] versus control [206/352 (58.5%)]. Gabrielli et al, also found a significant seropositivity of a virulent strain CagA containing H.Pylori in patients as compared to the control group (adjusted OR 2.99, 95% CI 1.52 to 5.88). We have also found the high frequency of H.pylori in ischemic stroke patients.

Sawayama et al, conclude that chronic infection with H.Pylori is associated with a higher risk of stroke due to small artery occlusion (odds ratio: 9.68, 95% CI 3.56 to 33.08). Park et al, found seropositivity of H.Pylori IgG 80% in stroke patients as compared to control group (60%), he also found H. pylori seropositivity more common (87.7%) in the stroke subtype of large artery disease. We also found high proportion (80.7%) of H.pylori on ELISA in ischemic stroke patients, which is concurrent to these studies.

De Bastiani et al, in 106 consecutive patients with well documented history of atherosclerotic stroke, found 63% positive H.Pylori IgG. The results of this study are lowerer as compared to our study results with regard of serum IgG level in ischemic stroke patients. The reason may ascribed to this finding is difference in geographical and living standard.

Masoud et al, in their case-control study of 91 cases of ischemic stroke and 80 normal healthy control cases found [66/91 (72.5%)] seropositivity (IgG) for H.Pylori as compared to the control group [45/80 (56.3%)]. Their results almost identical to our results in regard to seropositivity [121/150 (80.7%)].

CONCLUSION

In present study it was observed that H.pylori antibodies (IgG) were present in very high proportion (80.7%) among cases of ischemic stroke. However, large advanced study, with sophisticated diagnostic modalities and ample resources, is required to prove their significant association.

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