

Helicobacter Pylori Can Cause Vitamin B12 Deficiency

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Abstract

Several studies have indicated that H. pylori treatment causes an impact on the status or absorption of B12 vitamin. When talking about malabsorption of B12 vitamin, H. pylori is a big risk, especially for adults and older people who have suffered bacteria related diseases for a long time. A literature review of more than 25 papers have found inconclusive results due to the methodological differences in them. This paper assesses the relationship among the deficiency of vitamin B12 and H. pylori.

This study involved hundred patients in total, having deficient B12 serum vitamin. The study conducted Upper G I Endoscopy and obtained gastric biopsies for histological evidence and histopathological examination of H. pylori infection.

The results of the tissue biopsy pointed out chronic antral gastritis in thirty patients and chronic atrophic gastritis in sixty-two patients. It was found that the H. pylori infection by histology is positive in eight-six patients. A significant relation was found among H. pylori and atrophic gastritis and also between B12 deficiency and H. pylori. This study concluded that, the deficiency of B12 Vitamin is predominant in the Helicobacter pylori infection.

Key words: *Helicobacter pylori; pernicious anemia; Vitamin B12*

Introduction

The relation of H. pylori infection is significant with a lot of micronutrient deficiencies. H. pylori and the deficient B12 vitamin have a significant positive relation with each other. Researchers have found that the presence of H. pylori bacteria in many patients having pernicious anemia because of not well treated B12 vitamin deficiency, even in people without any digestive problem or gastritis.⁽¹⁾

H. pylori infection and chronic gastritis of the antrum of the abdominal have a strong relation between them. This causes impairment in the secretion of pepsin and gastric acid and is therefore related to malabsorption of B12 vitamin. The infection H. pylori is the source of B12 vitamin deficiency. It is also called as the supporter of gastritis ulcers and has the capacity to stop the stomach from absorbing B12 vitamin and thus leads to its deficiency.⁽²⁾

Pernicious anemia can characterise the ending stage of a procedure that starts with H. pylori linked gastritis and origins from progressive atrophy levels till the complete loss of parietal cell mass occurs. Many pieces of research have indicated that the B12 vitamin deficiency and H. pylori have a strong relation. This relation exists even in patients without any gastrointestinal issues our gastritis. H. pylori bacteria have been found in more than 50 percent of patients having pernicious anemia, specifically due to not well-treated deficiency of B12 vitamin.⁽³⁾

Method

This study involved 100 patients in total who had the level of B12 vitamin lower than 200 pg/ml. All of the patients had the age of 19 years or more than that. The patients having hepatic or renal failure, postgastrectomy status, patients who had received prior H. pylori eradication therapy and pregnant ladies were omitted from this experiment. The study also did not include immunocompromised states, for example,

diabetes mellitus and HIV infection because of more than one factors involved in these diseases. Peripheral smear was conducted for all of the involved patients. (4)

The gastrointestinal endoscopy was experimented in all of the patients to get biopsy specimens from the gastric antrum, fundus and body and to study the microscopic appearances of the gastric mucosa. The samples were gathered using individual sterile forceps. The samples of biopsy were forwarded for histopathology investigation and further processing, involving staining for H. pylori infection. (5)

Statistical analysis

The data of the experiment was analyzed using SPSS software. This helped to calculate the percentage of B12 vitamin deficiency and frequency in the patients of Helicobacter pylori infection. The standard deviation and the mean value were also calculated. To find out the statistical difference among the patients, the Chi-square method was applied. The value of p was taken as 0.05.

Results

In total, 100 patients were gathered having a B12 vitamin deficiency. From them, 65 were men and 35 were women, having the average age of 43.75± 19.44 yrs. 86 patients had positive results of Helicobacter pylori infection (Table 1). In the histopathology assessment, 62 percent of patients were found to have chronic atrophic gastritis. Normal Histology was found in approximately 3 percent of patients (Table 2). The distribution of B12

vitamin in connection with H. pylori revealed that there is a considerable correlation among H. pylori status and B12 value. Table 3 indicates that 31 patients infected by H. pylori had normal B12 vitamin level, while 55 patients had deficient B12 vitamin level. The patients were infected by H. pylori with a considerable difference (P value less than 0.05).

Table 1: H. Pylori status among patients.

H. pylori infection	Frequency	Percent
Negative	14	14%
Positive	86	86%
Total	100	100.0%

Table 2: Distribution of biopsy findings among patients.

Endoscopic findings	Frequency	Percent
Chronic antral gastritis	30	30%
Chronic atrophic gastritis	62	62%
Peptic ulcer	5	5%
Normal	3	3%
Total	100	100.0%

Table 3: The deficiency of Vitamin B₁₂ in H. pylori infected patients

Normal Deficiency			Vitamin B ₁₂		Total
H. pylori	Negative	Count	11	3	14
		%	78.6%	21.4%	100.0%
	Positive	Count	31	55	86
		%	36.0%	64.0%	100.0%
Total		Count	42	58	100
		%	42.0%	58.0%	100.0%

P value < 0.05

Discussion

This is a standard experiment for treating the lack of B12Vitamin, therefore it is vital to create the cause for B12vitamin shortage as it can be linked with disorders of ilium causing reduced absorption, inadequate dietary intake, intrinsic factor from practical cells, and disorders linked with gastric pepsin secretion. Helicobacter pylori has been found as an etiological factor in the shortage of B12Vitamin ^(1, 2). The clinical importance of this aspect is not very clear ⁽³⁾. It is also not clear if the calcium supplements have the capacity to reverse B12 vitamin malabsorption. The previous reports are not supported which indicates that megadoses of Vitamin C destroy B12 vitamin ⁽⁴⁾.

Nitrous oxide is an anesthetic component and it inactivates and oxidizes vitamin B12. That is the reason that both of the enzymes on which vitamin B12 is dependent become inhibited and able to create several characteristics. Over the counter or OTC availability is the reason for enhanced Omeprazole utilization and that is the reason that it is used without the recommendation of healthcare professionals. Although the drug is beneficial for GERD and PUD, its usage is full of risks with complications. This involves B12 vitamin deficiency complications, for example, macrocytic anemia, hyperhomocysteinemia and/or neuropathies, drug-drug interactions and enhanced aspiration pneumonia risk for some patients ⁽⁵⁾. Before the arrival of mouth ingested free B12 vitamin in the duodenum 2ndsection in small intestine, it stays in the bound state in addition with and R-binder⁽⁵⁾

Conclusion

This study concluded that Helicobacter pylori is an etiologic aspect of the deficiency of B12 vitamin. Therefore, this condition is predominantly found in Helicobacter pylori infected patients

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