



STUDY OF VITAMIN B12 LEVELS IN PATIENTS WITH TEMPORARY-DEFUNCTIONING ILEOSTOMY- A CASE SERIES

General Surgery

Dr Anil Kumar MS Professor of Surgery, JSS Medical College, JSSAHER, Mysuru.

Dr Chinmay Nalla* Postgraduate, JSS medical college, JSSAHER, Mysuru. *Corresponding Author

ABSTRACT

Pain abdomen is one of the the most common presentations of Ileal perforation. In emergency setting, ileostomy is the most commonly performed procedure for damage control and ileostomy closure is usually planned in the long run usually within 3 months. Naturally, after ileostomy there is alteration in the normal homeostasis of nutrient absorption in the gut. Vitamin B12 is the one of the most important micronutrient absorbed in the ileum. This study focuses on presence of any correlation between serum vitamin B12 levels and its absorption in patients of Temporary-defunctioning ileostomy over the period of time.

KEYWORDS

Vitamin B12 , Ileostomy

INTRODUCTION:

Ileostomy is One of the common procedures done on emergency basis in patients undergoing exploration laparotomy. Ileostomies are external openings created on the body wall by bringing out the bowel where the fecal wastes are collected outside commonly in a bag. Patient bowel distal to the stoma brought outside is given "rest" for the disease process to heal over the period and planned for reversal over the period of 10-12 weeks.

They are generally of two types ; temporary and permanent. Permanent ileostomies are carried out in patients with malignant growth of distal colon or any chronic pathology of the colon of colon such as crohns leading to toxic mega colon. Temporary ileostomy on the other hand is done to Defunction the Bowel distal to the stoma and is reversed once the patient improves over a period of time. It is done the loop of intestine which made the temporary stoma and closing the skin incision.

Ileum is the part of small intestine which follows the duodenum and jejunum and is separated from the cecum by the ileo cecal valve (ICV). The main function of the ileum is to absorb vitamin b12 and bile salts and whatever products of digestion were not absorbed by the jejunum. The ileum has an extremely large surface area both for the adsorption (attachment) of enzyme molecules and for the absorption of products of digestion. Owing to the complex mechanism of vitamin B12 absorption is , problems at any stage of this process can result in deficiency, despite adequate dietary intake.

MATERIALS AND METHODS:

Study Design: Observational study

b) Study Duration : one and half year

c) Sampling technique: Purposive sampling

Study setting and Method of collection of data:

Vitamin B12 values were measured in patients undergoing ileostomy and the investigaton were repeated after 3 months when patent is admitted for ileostomy closure. Values were compared and absorption of vitamin B12 in patients Patients during the period between ileostomy and closure was assessed.

Study Population and source of data: subjects eligible satisfying the inclusion and exclusion criteria undergoing ileostomy in JSS hospital, Mysuru.

Subject Eligibility:-

Inclusion Criteria

- All patients male and female with age between 14 - 70 years
- All emergency and elective cases undergoing ileostomy

Exclusion Criteria

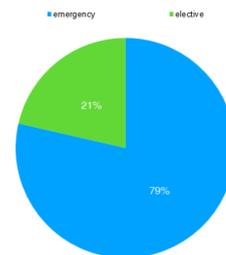
- All the children below 14 years
- Refusal by the patient to participate in the study

Study Assessments of end points – Vitamin B12 levels are assessed in patients undergoing ileostomy during the time of admission using

Chemiluminescence immunoassay method in Jss hospital, Mysuru. The values are repeated after 3months in the patients when the patients are admitted for ileostomy closure using the same method of chemiluminescence immunoassay.

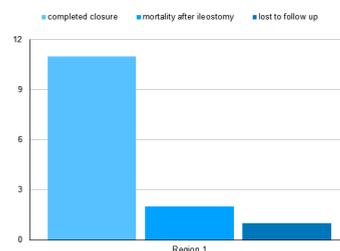
RESULTS: Patients undergoing ileostomy vitamin B12 levels are assessed by Chemiluminescence immunoassay and values of B12 during ileostomy and during ileostomy closure are compared and evaluated to assess the absorption of vitamin B12 in patients with ileostomy.

14 patients were studied over the period of one and half year who underwent ileostomy at jss hospital mysuru. Vitamin b12 was sent in the admission when the patient underwent ileostomy and patients got discharged subsequently and a repeat sample was sent when the patients got admitted for ileostomy closure.



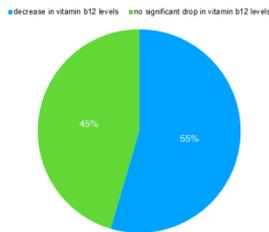
	emergency	elective
total sample size (14)	11 (approx 80 %)	3 (20%)

- In approx 80% of the cases the ileostomy was done on emergency basis where usually the indication was perforation secondary to obstruction or mesenteric ischemia. In 20% of the cases the etiology of more complex origin where surgery was done for malignant growth such as non hodgkins lymphoma.
- Out of 14 patients, 11 were followed up over the period of 3 months and closure was completed subsequently. 1 patient succumbed to the post operative complications and 2 patients among 14 were lost to followup



- 6 out of 14 patients, there was significant decrease in vitamin b12 levels before and after ileostomy. 5 patients had more or less similar values after 3 months.
- Incidence of anemia was noted in around 3 subjects of the study

group where it was due to iron deficiency anemia. In 2 patients there was significant drop in hb over the period but reason for the couldn't be accredited to vitamin b12 levels.



Discussion:

Pain abdomen is one of the the most common presentations of Ileal perforation. Earlier approach of the only primary closure of perforation or resection anastomosis usually carries with it high mortality with serious catastrophic complications like faecal fistula. In such cases construction of temporary loop ileostomy to provide de-functioning for repair of ileal perforations reduces the incidences of fatal complications (1)

Vitamin B12 is present in food as co-enzymatically active forms bound to protein from which they must be freed by processing or digestion prior to absorption. Intrinsic factor, which is released by parietal cells in the stomach, binds to vitamin B12 in the duodenum(2). This vitamin B12–intrinsic factor complex subsequently aids in the absorption of vitamin B12 in the terminal ileum. Thus abnormal ileal structure may reduce B12 absorption and function Leading to vitamin.

The Possibility of changed microbial balance/abnormal ileal structure in the terminal ileum after ileostomy may alter the vitamin B12 absorption.

In a study done by A.Jayaprakash et al in 2004 concluded that there was no significant correlation between serum vitamin B12 levels and duration of ileostomy overall or in the disease subgroups(3).

In a study done by jagenberd et al (4) in 1975 performed a study about vitamin B12 absorption in patients with continent ileostomy and concluded that the construction of a continent ileostomy reservoir thus does not appear to expose the patient to an increased risk of developing vitamin B12 malabsorption.

In 1969 with title Vitamin B12 Absorption in Ileostomy Patients after Operation for Ulcerative Colitis published by Hultén, L et al (5) concluded that the possibility of a changed microbe balance in the terminal ileum after ileostomy, as the cause of the apparently temporarily lowered vitamin B12-absorption.

This generalised opinion of reduced vitamin b12 levels can be attributed to several factors. Firstly, there is a loss of functional mucous membrane area and there is an actual loss of ileal length due to the operative procedure of creation of the pouch. This incidence is more in patients when ileostomy was done more proximally as majority of absorption occurs in distal ileum. The optimal method of supplementation of vitamin B12 in patients who have had ileal resections is unclear. Traditionally, the approach has been to supplement them parenterally with monthly vitamin B12 injections. Recent studies have shown that small amounts of vitamin B12 are absorbed passively in normal individuals; therefore, if patients with pernicious anemia are supplemented with large oral doses, they will absorb enough vitamin B12 to prevent deficiency.

Conclusion:

The study focussed on presence of any correlation between serum vitamin B12 levels and its absorption in patients of Temporary-defunctioning ileostomy over the period of time and from the present investigation, it can be concluded that the construction of the Ileostomy Seems to expose the patient to the patients to an increased risk of developing vitamin B12 malabsorption.

Detection of serum B12 deficiency and replacement of vitamin B12 parenterally is readily available, effective and cheap and high prevalence of B12 deficiency amongst these patients would suggest that we should routinely screen all such patients and give correction accordingly.

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