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CASE STUDY OF VITAMIN B12 DEFICIENCY CAUSING HYPERPIGMENTATION

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ABSTRACT

Vitamin B12 has an important role in synthesis of DNA. Deficiency of vitamin B12 is associated with hematologic, neurologic, psychiatric, gastrointestinal, dermatologic, and cardiovascular conditions. Vitamin B12 deficiency is also a common cause of megaloblastic anaemia. It is a cause of peripheral neuropathy, sub acute combined degeneration of the spinal cord, ataxia, optic atrophy, psychosis, depression, and dementia **[1]**. It is a possible risk factor for thrombosis, myocardial infarction, and stroke **[1]**.

Vitamin B12 deficiency causes skin hyper pigmentation, vitiligo (depigmentation), angular chelitis, and hair changes. A diagnosis of vitamin B12 deficiency is mostly ignored in its early stages because these signs are not specific only to vitamin B12 deficiency.

Vitamin B12 is present only in meat, it cannot be synthesized in the human body, and must be supplied in the diet. Hence, a detailed history of food and dietary habits is needed when evaluating the patient

Keywords: Vitamin B12, Hyperpigmentation, Megaloblastic anaemia

INTRODUCTION:

Vitamin B12 deficiency causes a range of disorders and affects all age groups. The main systems affected in vitamin B12 deficiency are the hematologic, gastrointestinal, and nervous systems **[2]**. The mucocutaneous manifestations of vitamin B12 deficiency are less common. In 1944, Dr Bramwell Cook first observed that hyper pigmentation of the skin was associated with a macrocytic anaemia **[3]**.

In patients with vitamin B12 deficiency, the following are reported: skin hyper pigmentation, vitiligo (depigmentation), hair changes, and recurrent angular stomatitis **[3]**. Hyper pigmentation especially over the dorsum of the hands and feet, with accentuation over the interphalangeal joints and terminal phalanges—associated with pigmentation of oral mucosa is characteristic of vitamin B12 deficiency **[5]**. These signs can be observed in many other diseases with or without vitamin B12 deficiency. Baker *et al* reported a series of 21 patients with vitamin B12 deficiency who had hyper-pigmentation of the skin **[3]**.

Aaron *et al* reported a series of 63 patients with vitamin B12 deficiency; 26 out of 63 (41%) patients had skin and mucosal changes.[4] Glossitis (inflammation of tongue) (31%) was the most common, followed by skin hyper pigmentation (19%), hair changes (9%), angular cheilitis (inflammation of lips) (8%), and vitiligo (depigmentation) (3%). The hyper pigmentation noted by Aaron *et al* was an important general examination finding **[5]**.

Few other cases of skin hyper pigmentation due to vitamin B12 deficiency have been reported in the literature **[6-10]**. The mechanism of hyper pigmentation is due to increased melanin synthesis rather than a defect in melanin **[11]**.

Case study

A 45 year old woman has complained of hyper pigmentation around mouth / chin region over past 3 months she is on non-veg diet. On examination she had no lesions, rash but preceding onset of hyper pigmentation is clearly seen. There are no clinical features of any auto immune disorders. The vitamin b 12 level was 106 pmol/L (normal range 145 to 857 pmol/ L). Other investigations such as complete blood picture are within normal limits. There is no other cause for hyperpigmentationn except low serum Vitamin B12 level. She was given Intra muscular 1000 microgram of Vitamin B12, followed by Vitamin B Complex tablet (BPLEX FORTE) daily. The vitamin B 12 level after treatment was 240 pmol/ L. The hyperpigmentation improved after 4 weeks of starting treatment.

Fig 1

Causes:

Vitamin B12 is present only in meat it is not synthesized in the human body, and must be supplied through diet only.

The most common cause of vitamin B12 deficiency is malabsorption of vitamins. It takes up to 2 to 5 years to develop vitamin B12 deficiency, even in presence of severe malabsorption.

Diagnosis:

- skin biopsy
- serum vitamin B12 level
- Schilling's test.

Treatment:

The treatment of vitamin B12 deficiency is 1000 micro gram of vitamin B12 by intramuscular injection every day for 1 to 2 weeks, followed by monthly injections for 3 months, and thereafter every 3 months for life.[2] The patients with nutritional deficiency can be given maintenance therapy of oral cobalamine tablets after the vitamin B12 injections therapy.

CONCLUSION:

Patient with hyper pigmentation, vitiligo (depigmentation) , angular chelitis, and hair changes alone should make us highly suspicious of the possibility of vitamin B12 deficiency. We should be more aware that if patient not responding to conventional therapy could be an indication of vitamin B12 deficiency. These skin conditions respond quickly to vitamin B12 therapy. Early treatment with vitamin B12 will prevent the complications caused with vitamin B12 deficiency.

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