Elevated B12: Disease Associations and Attitudes of General Practitioners and Medical Students

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Introduction

Elevated serum vitamin B12 has been linked to malignancies, liver disease and increased mortality.

Pseudo-hypercobalamenia describes a paradoxical state of high levels of free floating, unconjugated B12 in the blood compared to utilisable B12. This can cause features of B12 deficiency.

This can lead to neuropsychiatric symptoms such as mood disturbances, anxiety and psychosis.

Despite these significant clinical implications, particularly those related to pseudo-hypercobalaminemia, raised B12 is often overlooked in both primary care and medical education.

Aim

To assess General Practitioners' (GPs) awareness of:

- The clinical implications of elevated serum B12
- Its associations with serious diseases
- The concept and impact of pseudo-hypercobalamenia.

Additionally, this study aimed to explore whether current medical education covers elevated B12 by surveying medical students on their awareness of its disease associations and clinical implications.

Method

Cross-sectional surveys were distributed to 46 GPs and 50 medical students based in the UK.

This survey looked to assess their:

- Awareness of the causes and consequences of high serum vitamin B12
- What investigations they would use for these patients
- Their management practices

Survey questions for GPs

Question
What country did you study medicine in?
What year did you graduate medicine?
What year did you qualify as a GP?
Which university did you attend?
Would you investigate a patient with high B12 levels. If yes, how so?
What conditions can you think of that are associated with high B12 levels?
Do you expect cancer referral guidelines to change to incorporate patients with high B12 levels?
Did your medical school give any teaching on high B12?

Survey questions for medical students

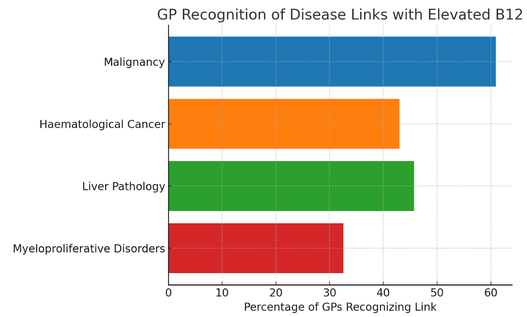
Question
What year of medicine are you in?
Has your medical school given you any teaching on high B12? If yes, what teaching have they provided?
Would you investigate a patient with high B12 levels? If yes, how would you investigate them?
Can you list any conditions associated with high B12 levels?
Would you expect cancer referral guidelines to change to incorporate patients with high B12 levels?

Results

Awareness of Disease Associations

89.1% of GPs recognised the link between elevated B12 and serious diseases

GP recognition of disease links with elevated B12



Pseudo-hypercobalaminemia awareness

No GPs demonstrated any awareness of pseudo-hypercobalaminemia or its neuropsychiatric implications

Investigation and management practices

- 63% of GPs would investigate elevated B12 levels
- There was no clear standard for which investigations to run

Support for guideline updates

34.8% of GPs supported updating guidelines to reflect elevated B12

Education on elevated B12

73.9% of GPs reported a **lack of education** on the consequences of high B12 levels

Awareness of medical students

- Only 26% recognised any disease association with elevated B12
- **No pseudo-hypercobalaminemia awareness**
- 82% reported no formal education

Conclusion

There are significant gaps in GP and medical student knowledge regarding elevated B12

This is most notable in understanding pseudo-hypercobalaminemia and its neuropsychiatric implications.

Efforts to improve education in this field and updated national guidelines are necessary to enhance patient care and outcomes

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