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In Clinical Pearl

Metformin and B12 Deficinecy

Metformin is recommended as a first-line oral therapy for hyperglycemia in diabetes.

Various mechanisms have been found to be associated with this deficiency like alterations in intestinal mobility, bacterial overgrowth, and interactions with a complex of intrinsic-factor/vitamin B12 and cubilin, an endocytic receptor involved in the absorption of cobalamin. B12-intrinsic factor complex uptake by ileal cell surface, a calcium-dependent process, also is affected by metformin because of impaired calcium availability.

Berchtold et al first reported in 1969 that metformin could cause vitamin B12 deficiency by reducing vitamin B12 absorption in the gastrointestinal tract.

Deficinecy of B12 in patients taking Metformin for a long time is a dose-related phenomenon and more prevalent at dosages of more than 1.5 g/d. In one of the randomized trial using 2.5 g/d of metformin for 4 years, the treatment group had a 7.2% greater absolute risk of developing vitamin B12 deficiency (<200 pg/mL; to convert to pmol/L, multiply by 0.7378) vs the group receiving placebo. (de Jager J, Kooy A, Lehert P, et al. Long term treatment with metformin in patients with type 2 diabetes and risk of vitamin B-12 deficiency: randomized placebo controlled trial. BMJ. 2010;340:c2181)

Vitamin B12 level may be periodically checked in patients who have been taking metformin for several years.

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