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M.C.V. should not be the only criteria to order vitamin B12 for anemia under evaluation

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Author(s)

Rohit Jain, Menka Kapil, Gajendra Nath Gupta

ABSTRACT

Introduction: A strict vegetarian diet has been associated with increased risk of cobalamin deficiency therefore; one would expect a high prevalence of Cobalamin deficiency in India. Erythrocyte indices have been used in the initial evaluation of anemic patients; high Mean corpuscular volume (MCV) is a traditional criterion for folate and vitamin B12 deficiencies. There is no large study of the prevalence of B12 deficiency among patients with normocytosis or micro-cytosis. **Method:** We retrospectively analyzed the records of serum vitamin B12 and MCV of both inpatients and outpatients at Santokba Durlabhji Memorial Hospital & Research Institute, Jaipur (Rajasthan) during the period from August 2010-April 2011. The study was aimed at identifying the correlation between vitamin B12 level and MCV; and prevalence of vitamin B12 deficiency in this region. **Result & Conclusion:** Every third person is vitamin B12 deficient in the region. There is no correlation between vitamin B12 levels and MCV in majority of the cases. MCV should not be the only criteria for ordering vitamin B12 for patients with anemia under evaluation.

KEYWORDS

Vitamin B12; MCV; Deficiency; Prevalence; Investigation

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References

- [1] Combe, J.S. (1824) History of a case of anaemia. Transactions Royal Medical & Chirurgical Society Edinburgh, 7, 194-203.
- [2] Addison, T. (1980) On the constitutional and local effects of disease of the suprarenal capsule. In: Goodhart, R.S. and Shils, M.E., Eds., Modern Nutrition in Health and Disease, 6th Edition, 229-259.
- [3] Flint, A. (1860) A clinical lecture on anemia. American Medical Times, 1, 181-186.
- [4] Castle, W.B. (1929) Nutrition classics. The American Journal of the Medical Science, 178, 748-764. doi:10.1097/00000441-192912000-00002
- [5] Appleby, P.N., Thorogood, M., Mann, J.I. and Key, T.J. (1999) The Oxford vegetarian study: An overview. The American Journal of Clinical Nutrition, 70, 525S-531S.
- [6] Laidlaw, S.A., Shultz, T.D., Cecchino, J.T. and Kopple, J.D. (1988) Plasma and urine taurine levels in vegans. The American Journal of Clinical Nutrition, 47, 660-663.
- [7] Sanders, T.A. (1999) The nutritional adequacy of plant-based diets. Proceedings of the Nutrition Society, 58, 265-269. doi:10.1017/S0029665199000361
- [8] Herbert, V. (1994) Staging vitamin B-12 (Cobalamin) status in vegetarians. The American Journal of Clinical Nutrition, 59, 1213S-1222S.
- [9] Balaji, L.N. and Dustagheer, A. (2000) Nutrition scenario in India—Implications for clinical practice. Journal of the Indian Medical Association, 98, 536-538, 542.

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- [10] Mathan, V.I. (1988) Tropical sprue in Southern India. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 82, 10-14. doi:10.1016/0035-9203(88)90247-7
- [11] Herbert, V. (1985) Biology of disease: Megaloblastic anemias. *Laboratory Investigation*, 52, 3-19.
- [12] Kumar, S., Ghosh, K. and Das, K.C. (1989) Serum vitamin B12 levels in an Indian population: An evaluation of three assay methods. *Medical Laboratory Science*, 46, 120-126.
- [13] Gomber, S., Kumar, S., Rusia, U., Gupta, P., Agarwal, K.N. and Sharma, S. (1998) Prevalence and etiology of nutritional anaemias in early childhood in an urban slum. *Indian Journal of Medical Research*, 107, 269-273.
- [14] Ng, S.C., Kuperan, P., Chan, K.S., Bosco, J. and Chan, G.L. (1988) Megaloblastic anaemia—A review from University Hospital, Kuala Lumpur. *Annals, Academy of Medicine, Singapore*, 17, 261-266.
- [15] Chanarin, I., Malkowska, V., O' Hea, A.M., Rinsler, M.G. and Price, A.B. (1985) Megaloblastic anaemia in a vegetarian Hindu community. *Lancet*, 2, 1168-1172. doi:10.1016/S0140-6736(85)92690-X
- [16] Khanduri, U., Sharma, A. and Joshi, A. (2005) Occult Cobalamin and folate deficiency in Indians. *National Medical Journal of India*, 18, 182-183.
- [17] Anil, K.G., Damji, A. and Uppaluri, A. (2004) Vitamin B12 deficiency prevalence among south Asians at a Toronto clinic. *Canadian Family Physician*, 50, 743-747.
- [18] Scott, J.M. (1999) Folate and vitamin B12. *Proceedings of the Nutrition Society*, 58, 441-448. doi:10.1017/S0029665199000580
- [19] Lindenbaum, J., Savage, D.G., Stabler, S.P. and Allen, R.H. (1990) Diagnosis of Cobalamin deficiency. II. Relative sensitivities of serum Cobalamin, methylmalonic acid and total homocysteine concentrations. *American Journal of Hematology*, 34, 99-107. doi:10.1002/ajh.2830340205
- [20] Refsum, H., Yajnik, C.S., Gadkari, M., Schneede, J., Vollset, S.E., ?rning, L., Guttormsen, A.B., Joglekar, A., Sayyad, M.G., Ulvik A. and Ueland, P.M. (2001) Hyper-homocysteinemia and elevated methylmalonic acid indicate a high prevalence of Cobalamin deficiency in Asian Indians. *The American Journal of Clinical Nutrition*, 74, 233-241.
- [21] Quoc Luong, K.V. and Hoang Nguyen, L.T. (2000) Folate and vitamin B12 deficiency Anemias in Vietnamese immigrants living in Southern California. *Southern Medical Journal*, 93, 53-57.
- [22] Kankonkar, S.R., Joshi, S.V., Tijoriwala, S.J., Prabhu, R.V., Raikar, S.C., Kankonkar, R.C. and Dhar, H.L. (2004) A study of vitamin B12 deficiency in different diseases. *Bombay Hospital Journal*, 46.
- [23] Wintrobe, M.M. (1943) Anemia—Classification and treatment on the basis of differences in the average value and hemoglobin content of the red corpuscles. *Archives of Internal Medicine*, 54, 256-280. doi:10.1001/archinte.1934.00160140099006
- [24] Wheeler, L.A., Brecher, G. and Sheiner, L.B. (1977) Clinical laboratory use in the evaluation of anemia. *The Journal of the American Medical Association*, 238, 2709- 2714. doi:10.1001/jama.1977.03280260039014
- [25] Vant Sant, P., Küsters, P.F. and Harthoorn-Lasthuizen, E.J. (1997) Dependency of MCV and haemoglobin concentration on plasma vitamin B12 levels in relation to sex and age. *Clinical and Laboratory Haematology*, 19, 27- 31. doi:10.1046/j.1365-2257.1997.00214.x
- [26] Oosterhuis, W.P., Niessen, R.W., Bossuyt, P.M., Sanders, G.T. and Sturk, A. (2000) Diagnostic value of mean corpuscular volume in the detection of vitamin B12 deficiency. *Scandinavian Journal of Clinical & Laboratory Investigation*, 60, 9. doi:10.1080/00365510050184994
- [27] Fora, M.A. and Mohammad, M.A. (2005) High frequency of suboptimal serum vitamin B12 level in adults in Jordan. *Saudi Medical Journal*, 26, 1591-1595.
- [28] Aslinia, F., Mazza, J.J. and Yale, S.H. (2006) Megaloblastic anemia and other causes of macrocytosis. *Clinical Medicine & Research*, 4, 236-241. doi:10.3121/cm.4.3.236
- [29] Obeid, R., Geisel, J., Schorr, H., Hübner, U. and Herrmann, W. (2002) The impact of vegetarianism on some haematological parameters. *European Journal of Haematology*, 69, 275-279. doi:10.1034/j.1600-0609.2002.02798.x
- [30] Fairbanks, V.F., Gilchrist, G.S., Brimhall, B., Jereb, J.A. and Goldston, E.C. (1979) Hemoglobin E trait

- [31] Hurst, D., Tittle, B., Kleman, K.M., Embury, S.H. and Lubin, B.H. (1983) Anemia and hemoglobinopathies in Southeast Asian refugee children. *Journal of Pediatrics*, 102, 692-697. doi: 10.1016/S0022-3476(83)80235-2
- [32] Dode, C., Berth, A., Bourdillon, F., Mahe, C., Labie, D. and Rochette, J. (1987) Haemoglobin disorders among Southeast-Asian refugees in France. *Acta Haematologica*, 78, 135-136. doi: 10.1159/000205862
- [33] Croft, R.F., Streeter, A.M. and O' Neill, B.J. (1974) Red cell indices in megaloblastosis and iron deficiency. *Pathology*, 6, 107-117. doi: 10.3109/00313027409068973
- [34] Spivak, J.L. (1982) Masked megaloblastic anemia. *Archives of Internal Medicine*, 142, 2111-2114. doi: 10.1001/archinte.1982.00340250071012
- [35] Green, R., Kuhl, W., Jacobson, R., Johnson, C., Carmel, R. and Beutler, E. (1982) Masking of macrocytosis by alpha-thalassemia in blacks with pernicious anemia. *The New England Journal of Medicine*, 307, 1322-1325. doi: 10.1056/NEJM198211183072106
- [36] Thompson, W.G., Babitz, L., Cassino, C., Freedman, M. and Lipkin, M., Jr. (1987) Evaluation of current criteria used to measure vitamin B12 levels. *American Journal of Medicine*, 82, 291-294. doi: 10.1016/0002-9343(87)90070-2
- [37] Tang, A.M. (1996) The role of serum micronutrient levels in HIV-1 disease progression. Johns Hopkins University, Baltimore.
- [38] den Elzen, W.P.J., van der Weele, G.M., Gussekloo, J., Westendorp, R.G.J. and Assendelft, W.J.J. (2010) Subnormal vitamin B12 concentrations and anaemia in older people: a systematic review. *BMC Geriatrics*, 10, 42. doi: 10.1186/1471-2318-10-42
- [39] Chui, C.H., Lau, F.Y., Wong, R., Soo, O.Y., Lam, C.K., Lee, P.W., Leung, H.K., So, C.K., Tsoi, W.C., Tang, N., Lam, W.K. and Cheng, G. (2001) Vitamin B12 deficiency— Need for a new guideline. *Applied Nutritional Investigation*, 17, 917-920.