

## Vitamin B12 Deficiency in Older Diabetic Patients: Is it Necessary to Create Guidelines for Early Diagnosis, Monitoring and Treatment of this Nutritional Problem?

Dominique Masferrer<sup>1\*</sup> and Hugo Sánchez<sup>2</sup>

<sup>1</sup>Department of Nutrition, Faculty of Medicine, University of Chile, Chile

<sup>2</sup>Public Nutrition Unit, Institute of Nutrition and Food Technology (INTA), University of Chile, Chile

According to reports from the World Health Organization, the aging population in both developed and in developing countries it has been possible due an improvement in access and coverage of health systems which has enabled a reduction in overall mortality rates and increased life expectancy of individuals [1]. However, this situation represents a challenge because it is necessary to maintain the achievements made in health and also generate environmental and sanitary conditions to ensure healthy aging and prevent pharmacological latrogenesis during the treatment of chronic diseases.

Considering that the nutrition in the elderly is a key element to achieving a good health, is essential to identify the requirements of critical nutrients during the aging. Among nutritional factors, vitamin B12 is essential for healthy aging. Vitamin B12 deficiency is associated with psychiatric and neurological diseases such as peripheral neuropathy and cognitive impairment [2,3] and hematological diseases (megaloblastic anaemia) [4]. Moreover, low serum vitamin B12 levels are associated with an increase of serum total homocysteine concentrations and increased cardiovascular risk [5,6].

Vitamin B12 deficiency is common in older adults and is considered a worldwide public health problem [7- 10]. International health agencies recommend that adults over the age of 50 get most of vitamin B12 from supplements or fortified foods [11]. However, these recommendations are not always considered by health professionals when they are prescribing dietary guidelines for older adults.

In this context, the situation of elderly diabetics it is worrying because apparently they would have an additional risk factor for the development of this nutritional problem. Several studies have identified that prolonged use of high doses of metformin represent a risk factor for vitamin B12 deficiency [12-17]. Considering that the use of this drug is recommended at the time of the diagnosis of disease (in addition of changes in lifestyles), the time of exposure to this risk factor would be quite extensive. It is estimated that after 10-12 years of use of this drug, clinical signs of vitamin B12 deficiency are evident [12], a period that represents an opportunity to be prevented the appearance of this nutritional problem.

According to what is stated in the literature review for Mazokopakis et al. [12] the relationship between metformin use and the associated risk to develop vitamin B12 deficiency is described in diabetic patients since 1969. Since then, observational and clinical studies have confirmed this association but the mechanisms of this association are still unclear. However, some authors note that this studies have presented methodological limitations, which have been related to the use of serum or plasma vitamin B12 levels as the sole indicator of vitamin B12 deficiency, despite that methylmalonic acid and holotranscobalamin measurements have changed the clinical practice of diagnosing B12 deficiency in recent years [12,18]. Other limitations of these studies have been the large variability in the dose and duration of metformin therapy [12].

Despite the disagreements on the relationship between metformin use and risk of vitamin B12 deficiency, Diabetes Mellitus type 2 is one of the conditions that produce more disease burden in the world [19] and the risk that older adults develop B12 deficiency is high [20-22], therefore is important to create guidelines that enhance the importance of monitoring serum levels of this vitamin and screening mechanisms to enable timely diagnosis of this nutritional problem in the elderly population and specifically those who are diabetic.

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\*Corresponding author: Dominique Masferrer, Researcher, Department of Nutrition, University of Chile, Avenida Independencia 1027, Santiago, Chile, Tel: 56229781460; E-mail: [dominique.masferrer@gmail.com](mailto:dominique.masferrer@gmail.com)

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