



Age-Specific Reference Limits of Serum TSH for the Appropriate Management of older patients with Hypothyroidism: A Need



Ricardo V García Mayor*

Endocrine Area, South Galicia Research Health Institute, Spain

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***Corresponding author:** Ricardo V García Mayor, Endocrine Area, South Galicia Research Health Institute, Vigo, Spain

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Editorial

Hypothyroidism is a high prevalent condition in the population of all the countries around the world. The occurrence of hypothyroidism increases with age, being mostly present in females. Measurement of serum TSH values is an important tool for the diagnosis and management of thyroid dysfunction. Since the serum TSH distribution curve is not Gaussian, for the determination of TSH reference limits, the median and the 2.5 and 97.5 centiles should be determined. Such reference limits use measurements from people of all ages, ethnicities and gender that represent the population of a determinate nation. Reports showed that population shifts in TSH distribution and the reference limits occur as a function of age and ethnic groups, thus the TSH distribution curve is a composite of specific curves for subpopulations [1]. National Health and Nutrition Examination Survey III (NHANES III) showed a progressive increase in the prevalence of serum TSH above 4.5 mIU/liter with age. Thus, up to 15% of individuals more than 70 yr old without thyroid disease or risk factors for thyroid disease have more of 4.5 mIU/liter as upper limit [2]. Subsequently, other authors have published similar results in other populations such as Scotland, China and France [3-5]. It is well known that longevity is associated with higher TSH concentrations [6]. In the aging subpopulation, increased serum TSH concentrations occur without changes in free T4 concentrations, suggested that the TSH increase arises from age-related changes in the TSH set-point or reduced TSH bioactivity rather than occult thyroid disease [7].

The use of age-specific reference values for serum TSH can allow us to avoid overdiagnosis of the subclinic hypothyroidism

(SCH). Data available demonstrated that when patients over 60 years of age diagnosed with SCH were reevaluated with age-specific intervals of TSH, results in the reclassification in around 70% of patients from abnormal to normal values of TSH [3,5], avoiding the subsequent unnecessary treatment with levothyroxine [8]. In a recent study conducted in the United Kingdom, it was observed that levothyroxine treatment is increasingly started in people with lower TSH levels, with the subsequent risk of overtreatment, especially in the older patients [9]. In line with this, it is well-known that overtreatment with levothyroxine of older patients with hypothyroidism is associated with increased risk of fractures and atrial fibrillation [10]. The use of age-specific reference limits for TSH, also should be useful to adjust the dose of levothyroxine downwards in elderly patients with frank hypothyroidism in order to avoid the relative excess of the dose of levothyroxine and the subsequent increase in the risk undesirable effects. Determination of reference limits of serum TSH for specific subpopulation will be a very difficult task, requiring TSH measurement from large number of individuals in each subpopulation who are free of thyroid disease. Boucai et al. [1], develop equations to predict subpopulation-specific TSH reference limits that can facilitate obtaining age-specific TSH limits for its application in the clinical practice. In this sense Raverot et al. [5] use an indirect approach for determining serum TSH reference limits, based the available data from routine testing, with no need collect blood specimens.

Conclusion

The advantages of the use of age-specific TSH reference limits would be: First, to know the real incidence and prevalence

of SCH in the elderly subpopulation, Second, avoid unnecessary treatment with levothyroxine of old people with SCH. Third, avoid the risk of overtreatment with levothyroxine in old patients with frank hypothyroidism, for adjusting downwards the levothyroxine doses in patients over 70 years old, and Forth, reduction of health expenditure of levothyroxine in the elder subpopulation.

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