Thyroid ultrasound alterations occurrence in patients with previous negative examination: A 6-years observational follow-up trial

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Background: Thyroid nodules represent a common clinical finding and their prevalence is increasing worldwide. However, the most recent international guidelines do not give indications on the need to retest adults with previous negative neck ultrasound (US).

Aim: To evaluate the incidence of thyroid US abnormalities in patients with previous negative thyroid US and identify patient's characteristics able to predict the risk of developing thyroid disease.

Methods: In 2011, 291 subjects were enrolled in a prospective clinical trial conducted in the Endocrine Unit of Modena to detect the prevalence of thyroid disease in adults unaware of thyroid pathology. Among these, 136 patients did not shown any US thyroid alteration. Up to now, 99 of these patients (61 females and 38 males, mean age 51±12 years) were prospectively examined with thyroid US after six years with the same US device. Each patient was further clinically evaluated, updating anamnesis, physical examination and anthropometric measurements.
Results: During a mean interval between the first and the second US evaluation of 72.4±6 months, 51 subjects (51.5%) developed thyroid US alterations, specifically 46 (46.5%) subjects developed thyroid nodules and 5 (5%) a US pattern of thyroiditis. According to the American Thyroid Association nodular sonographic pattern classification, among patients with nodular pathology we have found 26 subjects (56.5%) with at least one benign or very low-suspicion nodule, 9 (19.5%) with at least one low-suspicion nodule and 11 (24%) with at least one intermediate or high suspicion nodule. The incidence of US thyroid alterations is not significantly different among subjects with (49%) or without (51%) family history positive for thyroid disease ($P=0.366$). Moreover, thyroid abnormalities occurrence was not predicted by smoking habit ($P=0.615$), age ($P=0.826$), weight ($P=0.960$), BMI ($P=0.546$) and thyroid volume ($P=0.114$). These results were confirmed considering males and females separately.

Conclusions: These preliminary data show that more than 50% of patients have developed US abnormalities in a mean period of 6 years. Interestingly, among patients with thyroid nodular pathology, 24% of subjects have developed at least one intermediate or high suspicion sonographic thyroid nodule. This result justifies the need to retest patients, even when no US alterations have been detected during first examination. Currently, we are not able to predict thyroid alterations occurrence, since positive family history for thyroid disease, smoking habit, age, weight, BMI and thyroid volume seem to be not related to the incidence of US abnormalities.
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