Introduction: Thyroid function is commonly impaired in \(\beta\)-thalassemic patients with an estimated prevalence of hypothyroidism of 9–11%. According to literature, iron overload is the main cause of tissue damage involving both thyroid and pituitary gland, thus leading to primary or secondary hypothyroidism respectively. However, thyroid morphology has been rarely investigated in adults. The aim of this study is to evaluate thyroid volume (TV) and thyroid morphology in \(\beta\)-thalassemic adult patients compared to healthy controls.

Methods: We performed a cross-sectional, controlled study in 13 \(\beta\)-thalassemic adult patients (six males and seven females) (36.36±4.26 years) and 120 healthy volunteers (28 males and, 92 females) (38.1±4.9 years). All subjects underwent thyroid ultrasonography performed by the same operator. TV was calculated as the sum of the volume of the two lobes, each estimated by standardized formula: length×width×depth×0.479. Ultrasound evaluation included the presence/absence of hypoechogenicity and echotexture heterogeneity, and the presence/absence of nodules.

Results: TV was significantly lower in \(\beta\)-thalassemic patients (5.41±1.33 ml) than in the control group (8.45±2.81 ml) \((P<0.001)\) independently from their thyroid function (euthyroidism or hypothyroidism). The prevalence of diffuse echotexture heterogeneity and hypoechogenicity of the thyroid was significantly higher in thalassemic patients (92.3%) than in the control group (42.4%) \((P<0.001)\). Thyroid antibodies were negative in all thalassemic patients. Thyroid nodules were found in four thalassemic patients (30.7%) and in 44 volunteers (36.7%) \((P=0.674)\).

Discussion: In adult \(\beta\)-thalassemic patients TV was smaller than in healthy subjects even when patients with a normal thyroid function were considered. Moreover the prevalence of hypoechogenicity and echotexture heterogeneity, without a confirmed diagnosis of autoimmune thyroiditis, was higher. These results suggest a primary thyroid damage, characterized by thyroid hypoplasia and tissue alterations probably caused by iron infiltrates. Furthermore, the risk of developing thyroid nodules seems not to be increased in beta-thalassemic patients.
Thyroid volume in adult [beta]-thalassemic patients is smaller than in controls (<1 min ago)
Beta-thalassemia (β-T) is one of the most common heritable disorders, due to mutations in the gene coding for the hemoglobin β-chain [1, 2]. It is widespread, especially in tropical and subtropical areas of the world (Middle East, sub-Saharan Africa, and South East Asia), as well as in the Mediterranean populations [3]. In homozygotes or compound heterozygotes, the disease is. A previous study in a small sample of patients with β-T major investigated the relative importance of Additional markers of organ-specific autoimmunity were anti-thyroid peroxidase. A.P. Delitala, G. Fanciulli, M. Zoledziewska et al., ‘Allelic variant in CTLA4 is associated with thyroid failure and faster β-cell exhaustion in latent autoimmune diabetes in adults Thyroid hormones may also play a critical role in brain development in infants and in modulating brain metabolic activity in adults as shown by structural changes related to myelin, studied by brain imaging techniques (Bernal, 2002). Recent research aims to combine modern brain imaging techniques with years of experience in neuropsychological and clinical evaluations of thyroid dysfunctions. 2.1 All participants were transfusion-dependent thalassemia major patients (TMP), who presented with more than one iron-overload complication as defined by clinical and laboratory criteria. 2.2 Prior to initiation of this study, all patients received chelation monotherapy with DFO, 40 mg/kg; 8–12 h, subcutaneously, 3–5 days/week.