Association Between Thyroid Autoimmunity and Joint Hypermobility in Children and Adolescents

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ABSTRACT

Background: Joint Hypermobility Syndrome (JHS) is a common and often underdiagnosed noninflammatory hereditary connective tissue disorder. JHS is defined as mecanodystrophic symptoms in the presence of generalized joint hypermobility not leading to a systemic rheumatologic disease. Prevalence rates vary greatly according to age, gender, and ethnicity with higher rates in younger individuals, females and Asian. Over the past decade, JHS has been shown to be associated with fibromyalgia, chronic fatigue syndrome, functional gastrointestinal disorder, dysmenorrhea, anxiety, and joint disease. Beighton score is a commonly used reliable measure of joint hypermobility, whose possible scores range from 0–9. Anatomical syndromes describes a group of thyroid disorders including Grave’s disease and chronic lymphocytic thyroiditis (Hashimoto thyroiditis). Together, they constitute most prevalent autoimmune disorders affecting about 10% of the population and are a recognized cause of fibromyalgia and chronic widespread pain syndromes. Joint hypermobility shares many common symptoms with hypothyroidism including sleep disturbance, fibromyalgia, osteoarticular, and carpal tunnel syndrome. There are studies reporting association of thyroid dysfunctions with fibromyalgia and chronic fatigue syndromes. Evidence exists that joint hypermobility is present in a significant percentage of fibromyalgia and chronic fatigue syndrome patients. There are no studies to determine whether there is an association between joint hypermobility and thyroid autoimmunity.

Objective: To explore the association between joint hypermobility and autoimmune thyroid disease

Hypothesis: Children and adolescents with autoimmune thyroid disease have a higher prevalence of joint hypermobility.

Methods: Case control study comparing Beighton scores in children aged 5-18 years with autoimmune thyroid disorders with healthy controls followed in Flushing Hospital Medical Center between May and November 2018. Joint hypermobility was assessed by one investigator during subjects’ routine visits. All cases and controls were examined to determine their Beighton score, ranging from 0 to 9. To exclude Beighton score, the examiner assigned one point for each side of the body on which the subject can (1) passively dorsiflex the 5th finger beyond 60 degrees, (2) passively flex the fingers to the elbow of the arm, (3) hyperextend the knees beyond 100 degrees, and (4) hyperextend the elbows beyond 100 degrees. One point was also assigned if the subject can perform forward flexion of the trunk with the hands on the floor that the palm rest on the floor. Exclusion criteria were the presence of rheumatologic, neurological or psychiatric conditions. Data collected included gender, ethnicity, age, height, weight, BMI, family history, thyroid function tests, thyroid autoantibodies, thyroid ultrasound, and ANA. Data were analyzed using SPSS software. ANOVA, percentages and zile square, p<0.05 was considered significant.

Results: Total of 109 patients consented to participate. Of those, 37 (34%) had Hashimoto’s thyroiditis (mean age 14.1, 54% female) and 22 (21%) were followed up for primary hypothyroidism (mean age 10.4, 46% female). Control group consisted of 49 (45%) healthy children (mean age 10.5±1.1) followed up in FHMC Ambulatory Care Clinic. Compared to the control group, Hashimotos patients were older (p=0.01). Gender distribution groups were not significantly different (p=0.1). Controls were most likely to be Hispanic (p=0.01). Family history of autoimmune disease was significantly higher in Hashimoto group (p=0.01). Distribution of Beighton scores were not significantly different between 3 groups, 5% of Hashimoto’s patients had a Beighton score of 4 (which is consistent with joint hypermobility). Likewise, 3% of control has a Beighton score of 4. None of the 22 patients in hypothyroidism without autoimmune group had a Beighton score ≥4. No statistical differences detected between 3 groups in terms of proportion of Beighton score above ≥4.

Conclusion: In our small sample, JHS was not increased in autoimmune thyroid disorders or in thyroid dysfunction compared to healthy subjects.

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REFERENCES