

# THYROID DISEASE IN CHILDREN AND ADOLESCENCES WITH DOWN SYNDROME– 16 YEARS OF FOLLOW UP IN A SINGLE SERVICE

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## BACKGROUND

It is well known that thyroid disease (TD) is more prevalent in patients with Down Syndrome (DS). Among the dysfunctions are congenital hypothyroidism (CH), subclinical hypothyroidism (SC-H), Hashimoto's thyroiditis (HT) and Graves' disease (GD). The evaluation of the occurrence of these diseases in patients with DS according to age is still poorly reported.

## OBJECTIVES

Verify the prevalence of TD in children and adolescents with DS according to age, gender and describe the most prevalent disease.

## METHODS

A retrospective study was carried out to analyze the medical records of patients with DS in follow-up at the DS Ambulatory of the Regional University of Blumenau (SC, Brazil), attended from 2001 to 2016. The chronological age (CA) were evaluated at diagnosis, as well as gender and kind of thyroid disease of the patients. Were analyzed: *fT4*, TSH; Anti-thyroperoxidase antibody (TPO-Ab) and antithyroglobulin antibody (TG-Ab) were measured when TSH was above 6  $\mu$ IU/mL in patients older than 3 months. In patients with TSH suppressed, below 0.67  $\mu$ U / mL, and high *fT4*, were measured anti-TSH receptor antibody (TRAB-Ab), which when positive, was considered Graves Disease (GD). The patients were grouped according to the diagnosis: Congenital Hypothyroidism (CH), considered until 3 months of life, Subclinical Hypothyroidism(SC-H) when TSH above 6 $\mu$ IU/mL and normal *fT4*, Hashimoto's Thyroiditis(HT), when TSH above 6  $\mu$ UI/mL and low *fT4* with TPO-Ab and/or TG-Ab positive, and Graves Disease(GD). They grouped according to the age at diagnosis: 0 to 4 years, 5 to 9 years, 10 to 14 years and over 15.

## RESULTS / DISCUSSION

Thyroid function was evaluated in 81 patients (43 female). TD occurred in 57 patients (70.4%), 29 female. The average of CA at the diagnosis was 5.19 years.

**Table 1 – Absolut, relative and estimated proportions of the diagnosis**

| Diagnosis                  | n          | IC (95%)        |
|----------------------------|------------|-----------------|
| Subclinical Hypothyroidism | 37 (45.7%) | (34.83 – 56.53) |
| Hashimoto's Thyroiditis    | 9 (11.1%)  | (4.27 – 17.96)  |
| Congenital Hypothyroidism  | 6 (7.4%)   | (1.7 – 13.11)   |
| Graves Disease             | 5 (6.2%)   | (0.93 – 11.41)  |

**Table 2 –Ratio between the age at diagnosis and the type of thyroid disease**

| Age (years) | Diagnosis                           |                                 |                                   |                        | (Mean $\pm$ DP)   | Total      |
|-------------|-------------------------------------|---------------------------------|-----------------------------------|------------------------|-------------------|------------|
|             | Subclinical Hypothyroidism (n = 37) | Hashimoto's Thyroiditis (n = 9) | Congenital Hypothyroidism (n = 6) | Graves Disease (n = 5) |                   |            |
| 0 a 5       | 21 (56.8%)                          | 3 (33.3%)                       | 6 (100%)                          | 1 (20%)                | (1.66 $\pm$ 1.19) | 31 (54.4%) |
| 5 a 10      | 8 (21.6%)                           | 3 (33.3%)                       | 0 (0%)                            | 2 (40%)                | (7.32 $\pm$ 1.29) | 13 (22.8%) |
| 10 a 15     | 7 (18.9%)                           | 3 (33.3%)                       | 0 (0%)                            | 2 (40%)                | (12.7 $\pm$ 1.56) | 12 (21.1%) |
| > 15        | 1 (2.7%)                            | 0 (0%)                          | 0 (0%)                            | 0 (0%)                 | (17 $\pm$ -)      | 1 (1.8%)   |

Among the patients who developed some dysfunction, 54.4% of them were diagnosis between 0 and 4 years. Up to 9 years, 77.1% had already developed some thyroid disorder. In all age groups SC-H was the most incident disease, especially at earlier ages. In this study it was observed that the development of TD occurred in equivalent proportions between the genders. Differently from that is observed in the general population, in which there is predominance of TD in females. A higher risk of developing autoimmune disease can be observed in the population analyzed. There was a prevalence of 11.1% of HT in children with DS, while in the pediatric population in general this rate is around 1.2%. The prevalence of GD was also higher in patients with DS (6.2%) when compared to the general population (0.12%). According to the literature, CH, detected during neonatal screening presents a 28 to 35- fold higher incidence in the DS population. In the present study, the estimated risk of CH was equivalent to 7.4%

## CONCLUSION

TD diagnosed in 70.4% of patients with DS, without difference between the genders. SC-H was the most prevalent TD. The age range of 0 to 4 years was the one with the highest prevalence of diagnosis of TD. HT and GD occurred in all age groups.

## REFERENCES

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