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## **INCIDENCE OF AUTOIMMUNE THYROID DISEASES BEFORE AND AFTER CORRECTION OF IODINE DEFICIENCY IN R. of MACEDONIA**

The autoimmune diseases are complex which is dependent on various environmental influences. Iodine is an important modulating factor of the process. Iodine has direct effects on thymus development, development and function of various immune cells and antigenicity of thyroglobulin. The concept of a relation between dietary iodine intake and thyroid autoimmune disease was originally based on epidemiological surveys, which suggested that its prevalence was higher in areas of iodine sufficiency than in areas of iodine deficiency.

Aim of this study was to quantify the prevalence of autoimmune thyroid disease in population of Macedonia, before and after correction of iodine deficiency.

Previous information has clearly indicated a high incidence of goiter in Macedonia, in some areas in endemic form. According to the study of Ramzin in 1953 Macedonia had approximately 200.000 inhabitants with goiter, more than 20 % of the total population. In 1956 legislation was introduced which made table salt iodination mandatory, using potassium iodide at a concentration of 10 milligrams per kilogram. As a result of this iodination, subsequent reports showed a decrease in goiter prevalence.

Despite this progress, evidence of iodine deficiency persisted in R. of Macedonia, as shown by a higher goiter rate in the population born after the introduction of the iodine prophylaxis. We considered that assessment of the iodine deficiency was necessary.

A complete national survey conducted in 1995/96 adopted the recommended methodology published by WHO, UNICEF and ICCIDD for detecting iodine deficiency, using palpation of the thyroid, measurement of the thyroid volume with ultrasonography and measurement of urinary iodine. The complete results from this survey showed that Macedonia remained an iodine deficient area, while the preventive measures taken so far were not sufficient to correct the iodine deficiency among the population. According to the criteria of WHO, UNICEF and ICCIDD, mild to moderate iodine deficiency continue to exist in R. of Macedonia.

We therefore concluded that a new legal regulation should be introduced concerning the iodination of salt for human consumption, and we have recommended an increase in the iodine level.

The new regulations were instituted and became effective in October 1999; these regulated that all salt for human consumption, including the food industry, should be iodinated with 20-30 milligrams iodine per kilogram, using only potassium iodate.

Table 1 summarizes the changes in iodine status which occurred in R. of Macedonia from 1996 to 2004.

Table 1

Year	Median urinary Iodine (ug/L)	Goiter Prevalence Rate (%)	Median Thyroid Volume (ml)	Neonatal TSH > 5 mU/L (%)
1995/96	117.0	18.7	4.79	/
2000	154.1		/	/
2001	164.5	5.0	/	/

2002	198.5	5.8	4.04	5.4
2003	191.0	4.7	3.72	4.3

Incidence of goiter normalized in 2001 and remained normal in 2002 and 2003. Thyroid volume measured by ultrasonography decreased continuously following enforcement of the new regulations of salt iodization. The median of urinary iodine rose from 117 µg/L in 1995/96 prior to the adoption of the new regulations, to 154.1 µg/L in 2000, 164.5 µg/L in 2001, 198.5 µg/L in 2002 and 191 µg/L in 2003.

During 2002 and 2003, TSH screening tests were carried out in a total of 16,193 newborns. During the time of the study, the percent of children with TSH values higher than 5 mU/L was 5.4 % in the first year and 4.3 % in the second year.

One of the objectives of the National Iodine Deficiency Committee was to monitor whether the change in iodine status had any impact on the incidence of other thyroid diseases. The analyses are conducted every year after 1999 to assess whether an increase of iodine intake among population and correction of iodine deficiency can result in an increased incidence of Graves' disease and autoimmune thyroiditis. The data from these last 13 years have shown no statistically significant differences in the incidence of thyroid autoimmune diseases.

Table 2

Year	Total number of patients	Graves' diseases		Autoimmune thyroiditis	
		Number of patients	%	Number of patients	%
1991	2 079	257	12.36	55	2.65
1992	2 022	216	10.68	65	3.21
1993	2 180	241	11.06	57	2.61
1994	2 290	370	16.16	84	3.67
1995	2 685	446	16.61	120	4.47
1996	2 728	495	18.15	93	3.41
1997	2 489	421	16.91	84	3.37
1998	2 645	421	15.92	67	2.53
1999	2 630	416	15.82	78	2.97
<i>Change in iodine status (new regulations)</i>					
2000	3 157	442	14.00	129	4.09
2001	2 996	339	11.32	43	1.44
2002	3 264	508	15.56	120	3.68
2003	3 921	607	15.48	134	3.42
2004	4 352	339	7.79	192	4.41

In 2001, the National Committee, based on survey findings, concluded that Macedonia has corrected the iodine deficiency and requested verification and certification of this success by WHO, UNICEF and ICCIDD review. The expert team visited Macedonia May 2003. A thorough assessment of the program activities and the achievements was undertaken. The expert team in its final report concluded that the iodine deficiency in Macedonia was corrected.

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