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ORIGINAL ARTICLE

Childhood Hypothyroidism in Iraq: A Retrospective Study

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Hypothyroidism is one of the most frequently encountered endocrine diseases in childhood and the importance of its early diagnosis and adequate treatment prevents developmental retardation and other sequelae of the condition.

Materials and Methods: Over a ten year period, 45 children under 12 years with hypothyroidism were encountered an Endocrine and Diabetes Clinic for Children in Al-Kadhymia Teaching Hospital College of Medicine, Al-Nahrain University Baghdad, Iraq, over the period from Jan. 1993-Jan.2003.

Results: Five (11.1%) patients had Hashimoto thyroiditis and 40 (88.9%) were diagnosed with congenital primary hypothyroidism. Of the latter group 24(60%) from urban area and 16(40%) from rural area west of Baghdad. The female to male ratio was 1.6:1. A history of parental consanguinity was positive in 36(80%) of the patients and 30 (60.7%) had family history of hypothyroidism. Ten patients had dyshormonogenesis, 15 had aplastic thyroids, and 10 had ectopic tissue.

Conclusion: Although much information on the overall prevalence of childhood hypothyroidism in Iraq, is not available, the first observation to be made is that this is not a rare disease in this country. A genetic explanation is suggested by the involvement of multiple siblings and the high ratio of consanguinity in the population.

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Introduction

Hypoythyroidism is one of the most frequently encountered endocrine diseases of childhood, and the importance of its timely and early diagnosis and adequate treatment prevents developmental retardation and other sequelae of the condition.[1]

Hypothyroidism results from deficient production of the thyroid hormone or defects in thyroid hormone receptor activity. The disorder may be acquired or congenital manifested at birth or delayed as a result of a variety of congenital defects. Congenital causes of hypothyroidism may be sporadic or familial, goitrous or nongoitrous. In many cases the deficiency of thyroid hormone is severe and symptoms develop in the early weeks of life; in others, lesser degrees of deficiency

occur or manifestations may be delayed for months. The most common cause of acquired hypothyroidism is lymphocytic thyroiditis.[2]

Patients and Methods

This retrospective study included children under age of 12 years attending the Pediatric Endocrine and Diabetic clinic in Al-Kadhymia Teaching Hospital, College of Medicine, Al-Nahrain University, Baghdad, Iraq, over a period of 10 years (Jan 1993-Jan.2003) and had been clinically diagnosed as having hypothyroidism. The records of all these patients were reviewed and data including age, sex, residency, consanguinity, family history of thyroid disorders, pregnancy history, place of birth, postnatal follow up, symptoms and signs of the disease, biochemical studies and radiological investigation were obtained. At the time of diagnosis the following biochemical tests were done: Serum thyroxin (T_4), Thyroid stimulating hormone (TSH), and antithyroid microsomal antibodies (TMA), technetium ^{99}m or I^{123} (Amersham, UK) scan; In patients with suspected dyshormonogenesis a perchlorate discharge test was performed. Thyroid function tests were made by radioimmunoassay methods using commercially available kits (Mini VIDAS Report, BioMerieux, France).

The normal range T_4 (60-120) nmol/L, TSH (0.25-5) mUl/L.

Results

Of forty-five patients were diagnosed as cases of primary hypothyroidism, 5 (11.1%) had Hashimoto thyroiditis and 40 (88.9%) had congenital hypothyroidism. The patients with Hashimoto thyroiditis were from urban areas and were aged 6,6.5,7,9, and 10 years they presented with goiter and positive antithyroid microsomal antibodies at a titer between 1/100_1/500; Fine needle aspiration, finding's of these patients were suggestive of thyroiditis. Of the patients with congenital hypothyroidism 24 (60%) were from urban areas and 16 (40%) from rural areas west of Baghdad. The female to male ratio was 1.6:1. A history of parental consanguinity was documented for 36 (80%) of the patients and 30 (66.7%) had a family history of hypothyroidism (Table-1); in seven families multiple siblings were affected. None of the patients had a maternal history of use of any medication during pregnancy.

Table 1. Data on causes of congenital hypothyroidism, consanguinity and family history of disease

Case of hypothyroidism	Number	Causes of cong. Hypothryodism	Number	%	Consanguinity			Family historory of hypothyroidism	
					1st degree	2nd degree	No	Yes	No
Congenital	40	Aplasia	15	33.2	9	3	3	9	6
		Ectopy	10	22.2	6	2	2	8	2
		Dyshormonogenesis	10	22.2	9	1	-	7	3
		Non specified	5	11.2	3	-	2	3	2
Acquired	5	Hashimoto thyroiditis	5	11.2	2	1	2	3	2
Total	45		45	100	29	7	9	30	15

Table 2. Clinical manifestation in 40 cases of congenital primary hypothyroidism in Iraq

Presenting symptoms	Number	%	Presenting signs	Number	%
Hoarse cry	29	72.5	Umblical hernia	29	72.5
Dry skin	27	67.5	Macroglossia	28	70
Constipation	25	62.5	Dry skin	27	67.5
Lethargy	21	52.5	Short stature	19	47.5
Poor growth	16	40	Mental delay	19	47.5
Feeding problem	15	37.5	Hypotonia	19	47.5
Mental delay	15	37.5	Large fontanel	16	40
Delayed dentition	9	22.5	Facial puffiness	16	40
Poor schooling	9	22.5	Goiter	16	32.5
Over weight	9		Slow reflexes	9	22.5
Muscle pain	3				
Hypothermia	3				

The mean age at the time of diagnosis was 2.3 years (range 2 weeks-12 years). Only ten patients were diagnosed in the neonatal period; seven of them because they were screened having had the history of other affected siblings. Of forty, 18 (45%) were born in hospital and 22 (55%) were delivered at home. Only 14 (35%) of these children were followed up regularly postnataly whereas 26(65%) had no regular follow ups.

Table-2 shows clinical manifestations in the children studied.

Mean thyroxin level was (28 nmol) (range 11-58 nmol/L, normal level 60-120 nmol/L), the thyroid stimulating hormone (TSH) level was 78mU/L (range 24-136 mU/L, normal; 0.25-5 mUl/L).

Radionuclear studies were done in 35 (77.8%) of the patients, 10 were found to have dyshormonogenesis, 15 aplastic thyroids, and 10 had ectopic tissue. Six of the dyshormonogenesis group were goitrous and 4 were non goitrous.

Discussion

It is difficult to ascertain the incidence of acquired hypothyroidism, but Hashimotos thyroiditis is the most prevalent with a frequency as high as 1.3%.[3,4]

In the congenital form, primary congenital hypothyroidism is the most common. Neonatal screening programmes for congenital hypothyroidism have revealed a variable incidence. In Iraq the incidence is not known but in USA and other countries up to 1/2500 have been reported.[1,2,5]

Primary congenital hypothyroidism can be due to the absent or hypoplastic gland 35%, an ectopic gland 43%, or an inborn error of metabolism of the thyroid hormone 22%.[6] In our series the percentage is near to these figures (Table-1) and differ from others.[12-15]

Determination of the cause of congenital hypothyroidism has genetic, epidemiological and prognostic importance.[7,14]

Despite the fact that we do not know much about the overall prevalence of childhood hypothyroidism in Iraq, the first observation to be made is that this is not a rare disease in this country. Although Hashimotos thryroiditis is the most prevalent form of hypothyroidism worldwide,[8,16] in our series we have only 5 cases which account for only 11.2% of our series. This however can be explained by our small number of patients, younger age group and the fact that the majority of the patients with Hashimotos thyroiditis disease are asymptomatic.[9,10,17]

Congenital primary hypothyroidism found to be the most common; was seen in 40 patients which account (88.8%) of our series. Although we were investigating a highly selected group, it is of interest, that 22.3% of our fully investigated cases were found to have dyshormonogenesis, a figure near to that quoted in presacure literature.[3,4,6,11] A genetic explanation is suggested by the involvement of multiple siblings and the high rate of consanguinity in this population.[3,12]

It is worrying that the mean age of cases was as late as 2.5 years, this was explained on the basis of the lack of neonatal screening programmes in this country, and lack of regular postnatal follow up. This signifies the importance of establishing a national neonatal screening programme, which has been established in many areas.[1,3,4,11,12]

These results demonstrate that congenital primary hypothyroidism is not an uncommon disease, probably due to the high rate of consanguinity among our population; thyroid scanning and per chlorate discharge test, if needed are necessary to identify the cause of congenital hypothyroidism which is of genetic, epidemiological and prognostic importance.

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