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Reinke's oedema and thyroid function

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Abstract

Reinke's oedema (RO) of the vocal folds is a condition of unknown aetiology. Cigarette smoking and vocal abuse may contribute to its development. Hypothyroidism has been described as an aetiological factor but, to date, no controlled study has been published confirming this association. This prospective, controlled study compared thyroid function in 61 consecutive RO patients with an age and sex matched control group (n = 65) without laryngeal disease. Thyroid function was assessed by measuring serum thyroid stimulating hormone (TSH), free thyroxine (T_4) and tri-iodothyronine (T_3). Hypothyroidism was diagnosed when TSH was above normal with a T_3 and T_4 below the normal range.

Four RO patients were hypothyroid at the time of diagnosis, compared to five of the control group. Six RO patients had past or present hypothyroidism compared to seven of the controls. One RO patient and two controls were euthyroid with marginally elevated TSH levels. Although the incidence of hypothyroidism in this group of Reinke's oedema patients is higher than expected in a normal population, it is similar to that in an age and sex matched control group, reflecting the prevalence of hypothyroidism in middle aged women.

This study suggests that hypothyroidism is not an aetiological factor in the development of Reinke's oedema.

Introduction

Reinke's oedema is defined as chronic oedema of the vocal folds and is typically a condition affecting women (Reinke, 1895; Hajek, 1925). The aetiology of Reinke's oedema is unknown; cigarette smoking and vocal abuse may contribute to its development. Hypothyroidism has been described as an aetiological factor (Hilger, 1956) although, to date, there have been no controlled studies published on its association with Reinke's oedema. The aim of this study was to carry out a prospective controlled study comparing thyroid function in Reinke's oedema patients with normal controls.

Methods

Sixty-one consecutive patients with Reinke's oedema, diagnosed at the voice clinic in the Royal Infirmary of Edinburgh over a two-year period between 1988 and 1990, were entered into the study. These patients were age and sex matched with the control group who did not have Reinke's oedema. Smoking history was taken from each group as well as laryngeal examination. Thyroid function was measured in each group. Thyroid stimulating hormone (TSH) and free thyroxine (T_4) and tri-iodothyronine (T_3) were assayed. The results were analyzed statistically using Chi-squared test with Yates correction. Hypothyroidism was defined by an increased TSH and decreased T_3 and T_4.

Results

The age and sex of the two groups are shown in Table I. The age range of the Reinke's oedema group was 29 to 79 years and the control group was 31 to 79 years. The smoking history of the two groups is shown in Table II. There was a statistically significant difference in the smoking habits between the two groups. Eighty-four per cent of the Reinke's oedema group smoked, compared with 55 per cent of controls ($p<0.001$). Thyroid function in the two groups is shown in Table III; there was no statistically significant difference in thyroid function between the two groups.

Discussion

This study, like previous studies, shows that Reinke's oedema is a condition which occurs mainly in post meno-

TABLE I
AGE AND SEX OF THE REINKE'S OEDEMA AND CONTROL GROUPS

	n	Male	Female	Age range	Mean (years)
Reinke's oedema	61	3	58	29–79	55.6
Control	65	3	62	31–79	56.3

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TABLE II
SMOKING IN THE REINKE'S OEDEMA AND CONTROL GROUPS

	n	Smokers	Non-smokers
Reinke's oedema	61	51 (84%)*	10 (16%)
Control group	60	33 (55%)	27 (45%)

*$p<0.001$ (Chi-squared with Yates correction)

pausal women (Kawase *et al.*, 1982). It also shows that there is a strong association with smoking. Moesgaard Nielsen *et al.* (1986) showed that stopping smoking after surgical intervention is the most important factor in preventing recurrence of vocal fold oedema. The recurrence rate may be as high as 60 per cent in those who continue to smoke. On the other hand, Kleinsasser (1968) and Ballenger (1977) maintain that vocal abuse is the major aetiological factor in Reinke's oedema. However, Kawase *et al.* (1982) consider that this is controversial and that chronic vocal abuse is not particularly associated with the disease. This is confirmed by Moesgaard Nielsen *et al.* (1986) where correction of vocal abuse after surgical intervention had only limited benefit. The effect of cigarette smoke on the larynx has not been studied but Larson *et al.* (1947) showed that cigarette smoking caused conjunctival oedema. Recent work by Pau (1985) has looked at the vascular architecture of the vocal cord surfaces with fluorescein angiography. In patients with Reinke's oedema he showed that there was a change from the normal linear vascular pattern of the vocal cords to one which showed distortion and extravasation of fluorescein into Reinke's space. This study suggests that there is an increase in vascular permeability in the vocal cords in patients with Reinke's oedema. It may be that this is triggered by the irritant effect of cigarette smoke.

This study confirms that Reinke's oedema is a condition found predominantly in post menopausal women. Matsuo *et al.* (1980) has suggested that aging led to the physiological condition which may precipitate Reinke's oedema. Ishii (1966) stated that this disease is a manifestation of menopausal disorders. The relationship, if any, to endocrine change is unclear. Hilger (1956) reported that the appearance of Reinke's oedema was very like that found in the myxodematous or hypothyroid state. This concept has been promulgated over the years by Maloney (1960) and Bicknell (1973). These previous studies had fewer numbers and were uncontrolled.

The present study has shown clearly that the incidence of hypothyroidism was no different in the Reinke's oedema and the control groups. The single most important difference between the two groups was the predominance of cigarette smoking in the Reinke's oedema group. This study, therefore, supports previous work

Key words: Vocal cord, oedema (Reinke); Myxoedema

TABLE III
THYROID FUNCTION IN REINKE'S OEDEMA AND CONTROL GROUPS

	Reinke's oedema		Control groups	
Euthyroid	54		55	
Hypothyroid	4	8%	5	14%
Hypothyroid (on replacement)	2		3	
Marginal hypothyroidism	1		2	
Hyperthyroid	0		1	
Total	61		66	

which suggests that cigarette smoking is probably the main aetiological agent in the development of Reinke's oedema.

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