

***STUDY OF THE AETIOLOGICAL FACTORS
AND MANAGEMENT STRATEGIES OF
REINKE'S EDEMA***

Thesis

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Otorhinolaryngology***

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دراسة للعوامل المسببة ولطرق علاج ارتشاح راينك للثنايا الصوتية

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المخلص العربي

وجد مرض ارتشاح راينك منذ بداية استخدام الميكروسكوب الحنجري ومع بداية علم الحنجرة ويعتبر مرضى ارتشاح راينك مرض شائع يصيب النثايا الصوتية للحنجرة ويسبب تغيرات فى جودة الصوت.

هذه الدراسة أجريت لبحث الاسباب المختلفة لمرض ارتشاح راينك ولدراسة طرق العلاج المختلفة. وقد أجريت على أربعين مريضاً يتراوح أعمارهم من عشرين إلى ستة وثمانين عاماً ويعانون جميعاً من مرض ارتشاح راينك وقد استجاب اثنى عشر مريضاً كلهم من الدرجة الأولى لمرض ارتشاح راينك للمعالجة الوقائية وعلاج الصوت بعد توقفهم عن التدخين ولم يستجب ثمانية وعشرون مريضاً للعلاج وأجريت لهم عمليات جراحية وتم تقسيمهم إلى مجموعتين.

مجموعة (A): أربعة عشر مريضاً تم حجزهم لإجراء جراحة الحنجرة الدقيقة باستخدام الآلات الدقيقة للحنجرة.

مجموعة (E): أربعة عشر مريضاً تم حجزهم لإجراء جراحة الحنجرة الدقيقة باستخدام ليزر ثانى اكسيد الكربون.

خضع جميع المرضى للعلاج الصوتى ووجد أن العلاج الصوتى ضرورى لتحسين جودة الصوت ولكنه لا يعيد الصوت إلى طبيعته وإن أفضل النتائج وجدت فى المرضى اللذين أجريت لهم عمليات جراحية واقلعوا عن التدخين.

لا يعتبر مرض ارتشاح راينك من مسببات الأورام ولا علاقة بين مرض ارتشاح راينك وبين مرض الارتشاح المخاطى . فى حين ان الحساسية للمواد المستنشقة أو المأكولات تجعل الغشاء المخاطى للحنجرة أكثر تأثراً بالعوامل المختلفة من سوء استخدام الصوت وارتجاع المرئ والمواد المهيجة فى مجال العمل. وكل هذه

العوامل مجتمعة تساعد على إحداث مرض ارتشاح راينك وللعلاج الفعال لمرض ارتشاح راينك لابد من علاج هذه العوامل أو تجنبها .

أهم العوامل التي تؤدي إلى مرض ارتشاح راينك هي التدخين حيث أن التدخين يؤدي إلى ضعف تدفق الدم من خلال الأوعية الدموية والتغيير في تركيز الدهون في الدم وكذلك يؤدي إلى زيادة اتحاد الكربون بالهيموجلوبين مما يؤثر بدوره في تغذية الخلايا بالأكسجين.

كما يساعد التدخين على تصلب الشرايين وذلك التأثير السلبي للتدخين يؤدي إلى صعوبة وصول الدم في الأوعية الدموية بالأحبال الصوتية وفي حالة مرض ارتشاح راينك تكون الأوعية الدموية غير موازية للحبل الصوتي ولكنها تسير بطرق عشوائية مما يجعلها عرضة للتكسير أثناء إحداث الصوت.

إن التقدم المستمر في استخدام ثاني أكسيد الكربون في الليزر أدى إلى استخدام الليزر بنجاح في إجراء العمليات الدقيقة بالحنجرة.

تبعاً لنتائج هذه الدراسة وجد أن العوامل المؤدية للمرض ارتشاح راينك هي التدخين وسوء استعمال الصوت وارتجاع المريء ويجب التخلص من هذه الأسباب جميعاً قبل العلاج وأن الدرجة الأولى من مرض ارتشاح راينك تستجيب جيداً للعلاج الصوتي في حين أن الدرجة الثانية والثالثة تحتاج إلى العلاج الجراحي باستخدام الآلات الدقيقة للحنجرة أو ليزر ثاني أكسيد الكربون وأن العلاج الصوتي يجب استمراره بعد العلاج الجراحي.

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Table (2): Patient's data

	sex	Age	Smoking	Stop smoking	reflux	Asthma	Hypersensitivity	Hypothyroidism	Grade	Conservative treatment	Laser	Cold instrument	Recurrent	Subjective improvement	Pitch	Loudness	Abuse of voice
1	♂	24	Passive	Stop smoking					I	Respond					Adequate	Adequate	
2	♂	25	Passive	Stop smoking					I	Respond					Adequate	Adequate	
3	♂	27	Passive	Stop smoking					I	Respond					Adequate	Adequate	Abuse
4	♂	31	Passive	Stop smoking			Hyper-sensitivity		I	Respond					Adequate	Adequate	
5	♂	39	Heavy	Stop smoking					III		Laser				Adequate	Adequate	Abuse
6	♂	40	Mild smoker	Smoke			Hyper-sensitivity		I	Respond					Adequate	Adequate	
7	♂	42	Heavy smokers (20/day	Stop smoking			Hyper-sensitivity		III			cold			Low pitch	Too soft	
8	♂	40	/20 years)	Stop smoking			Hyper-sensitivity		III		Laser				Low pitch	too loud	Abuse
9	♂	40	Heavy	Stop smoking			Hyper-sensitivity		III		Laser				Adequate	Adequate	
10	♂	44	Heavy	Smoke					II		Laser		Recurrent		Low pitch	Adequate	Abuse
11	♂	45	Heavy	Smoke					III			cold			Low pitch	Adequate	
12	♂	51	Heavy	Stop smoking					III		laser				Low pitch	Adequate	Abuse
13	♂	52	Heavy	Stop smoking					III			cold			Adequate	Too loud	Abuse
14	♂	54	Heavy	Stop smoking			Hyper-sensitivity		III		laser				Adequate	Too soft	
15	♂	55	Heavy	Smoke					III			cold	Recurrent		Low pitch	Adequate	Abuse
16	♂	57	Heavy	Stop smoking					III			cold			Low pitch	Adequate	
17	♂	58	Heavy	Smoke					III		laser		Recurrent		Low pitch	Adequate	
18	♂	65	Heavy	Stop smoking					III			cold			Adequate	Adequate	
19	♂	67	Heavy	Stop smoking					III			cold			Low pitch	Adequate	
20	♂	67	Heavy	Smoke					III			cold			Low pitch	Too loud	
21	♂	68	Heavy	smoke					III		laser				Low pitch	Adequate	
22	♀	86	Heavy	smoke					III			cold		The same	Low pitch	Adequate	

Table (2): Patient's data

	sex	Age	Smoking	Stop smoking	reflux	Asthma	Hyper-sensitivity	Hypoth-roidism	Grade	Conservative tt		Cold instrument	Recurrent	Subjective improveme	Pitch	Loudness	Abuse of voice
23	♀	20	Passive	Stop smoking					I	Respond					Adequate	Adequate	
24	♀	20	Passive	Stop smoking					I	Respond					Adequate	Adequate	
25	♀	22	Passive	Stop smoking					I	Respond					Adequate	Adequate	
26	♀	29	Passive	Stop smoking					I	Respond					Adequate	Adequate	
27	♀	30	Mild smoker	Stop smoking					I	Respond					Adequate	Adequate	
28	♀	30	(5/day)	Stop smoking					I	Respond					Adequate	Adequate	Abuse
29	♀	30	(10 years)	Stop smoking					II		laser				Adequate	Adequate	
30	♀	30	Mild	Stop smoking					I	Respond					Adequate	Adequate	
31	♀	35	Heavy smoker	Stop smoking					III		laser				Adequate	Adequate	
32	♀	35	Heavy smoker	Stop smoking			Hyper-sensitive		III			cold			Adequate	Adequate	
33	♀	38	Heavy smoker	Stop smoking		Asthma			III		laser				Low pitch	Adequate	Abuse
34	♀	39	Heavy smoker	Stop			Hyper-sensitive		III		laser				Low pitch	Adequate	Abuse
35	♀	52	Heavy smoker	Smoke		Asthma			III			cold	Recurrent	The same	Low pitch	Too soft	
36	♀	52	Heavy smoker	Stop smoking	reflux			Hypothy-roidism	III		laser				Low pitch	Adequate	
37	♀	58	Heavy smoker	Stop smoking		Asthma			III		laser				Low pitch	Too loud	
38	♀	58	Heavy smoker	Stop smoking	reflux				III			cold			Low pitch	Too loud	
39	♀	60	Heavy smoker	Stop smoking					III			cold			Low pitch	Adequate	
40	♀	72	Heavy smoker	Smoke	reflux			Hypothy-roidism	III			cold			Low pitch	Adequate	

INTRODUCTION

Reinke's edema has been observed as a clinical entity since the introduction of the conventional laryngoscope and the origin of laryngology (*Zeitels et al., 1997*).

Turk depicted this condition in his clinical atlas in (1860) and referred to it as chronic inflammation of the vocal folds. *Hajek in (1891)* and then *Reinke in (1897)* performed infusion experiments in the larynx to simulate membranous edema and to understand the mechanisms of laryngeal airway obstruction. *Hajek in (1925)* credited Reinke with identifying the subepithelial compartment in the vocal fold that is superficial to the vocal ligament, bounded anteriorly by Broyle's ligament, and limited posteriorly by the arytenoid. *Hirano in (1975)* has identified this compartment as the superficial lamina propria. *Zeitels in (1995)* noted that this compartment underlies the vibratory epithelium of the musculomembranous vocal fold, which can be identified caudally by the inferior arcuate line.

Over time, extensive chronic swelling of the superficial lamina propria has become known as Reinke's edema (*Zeitels et al., 1997*).

Numerous terms have been used to denote the clinical entity recognized as Reinke's edema. These terms include polypoid corditis (*Jackson et al., 1937*), polypoid degeneration (*Holinger et al., 1951*), and chronic hypertrophic laryngitis (*Putney et al., 1940*).

Reinke's edema is a common disease of the vocal fold ultimately causing changes in voice quality (*Sato et al., 1999*).

The entire length of the membranous vocal fold is edematous and swollen. Histologically, the primary feature is edema in Reinke's space (*Hirano et al., 1993*).

The aetiology of Reinke's edema is unknown (*White et al., 1991*). The most frequent aetiological factors of Reinke's edema are considered to be smoking and aging (*Sanda et al., 1993*). The mechanism for the onset and development of the disease remains unclear (*Sato et al., 1999*), frequently with vocal abuse (*Jackson et al., 1937 and Putney et al., 1940*). And occasionally with reflux (*Koufman et al., 1995*). Hypothyroidism has been described as an aetiological factor (*Hilger, 1956*).

Benign vocal fold lesions represent a significant problem for otolaryngologists. When these lesions are not responsive to medical and or speech therapy, excision by microlaryngeal surgery is the next option (*Noordzij et al., 2000*).
