

Clinic, Diagnostics and Treatment Peculiarities of Eagle's syndrome

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SUMMARY

In the period from 1998 to 2002 97 patients suffering from Eagle's syndrome were treated at Maxillofacial Surgery Clinic of Kaunas University of Medicine Clinic. In this article the following are being discussed and indicated: patient's treatment methodologies, peculiarities of disease clinic depending on disturbance localization in the stylohyoid complex, the scheme of a conservative complex treatment, indications and methods of surgical treatment, and treatment results.

Keywords: lingual pharynx nerve, neuralgia of the lingual pharynx nerve, Eagle's syndrome and atypical facial pain.

INTRODUCTION

There are not many statistical data concerning the morbidity rate of Eagle's syndrome. Following data in literature, it is a rare disease. 0.04-0.08% of population is suffering from it [1], whereas 1.5 – 3.0 % of adults have some of the complaints due to the pathology of this apparatus [8].

Many authors have analyzed and treated only a few patients each. The analysis data about all the questions concerning the disease described by them are most often controversial [7, 9, 11]. There is little data about this disease in Lithuania. The number of scientists and practitioners who have analyzed it is not high; therefore, the problem of Eagle's syndrome's etiology, pathogenesis, clinic, diagnostics and treatment still remains unsolved and relevant.

The stylohyoid apparatus, which has a general embryogenesis (develops out of the second Reichert branchial arch), consists of the styloid process, the stylohyoid ligaments and the mandible ligaments, the hyoid with thyroid cartilage and muscles attached to the styloid process: the stylohyoid, the stylolingual and the stylopharynx.

MATERIAL AND METHODS

In the period from 1998 to 2002 97 patients (65 women and 32 men) suffering from Eagle's syndrome were treated at Maxillofacial Surgery Clinic of Kaunas University of Medicine Clinic (Table 1). 51 (52.6%) patients were suffering from the left side Eagle's syndrome, whereas 36 (37.2%) were suffering from the right side Eagle's syndrome, and 10 (10.2%) patients were suffering from Eagle's syndrome of both sides.

Most of the patients suffering from Eagle's syndrome (72.1%) were 45-75 years of age.

Regardless of the fact that 73.15 percent of patients have been suffering from the disease for more than a year and 26.05 percent – for more than 5 years (Table 2), before coming to our clinic the correct diagnosis was determined only in 5 cases. Others were treated from various diseases,

such as trigeminal neuralgias, cervical osteochondrosis, neurocirculatory dystonia and so on.

We analyzed patients' contiguous diseases (Table 3) in order to discuss any possible influence of other diseases in the etiology of Eagle's syndrome.

The analysis of etiologic factors showed that Eagle's syndrome had a disturbance of the stylohyoid complex for more than 74 percent of patients. Most of them had the styloid processes longer in the unhealthy side than those in the healthy one. Often the styloid processes in the unhealthy side were not only elongated, but also thicker and deformed. Other authors also acknowledge the elongation of the styloid process to be an etiologic cause of Eagle's syndrome [2,3,5].

The analysis of factors which might have had influence on the development of the disease discussed showed that 63.9 percent of the studied suffered from cervical osteochondrosis. This allows us to conclude reasonably those dystrophic - degenerative changes both happening in the cervical part of the spinal column and in the hyoid complex of the styloid process are the cause of Eagle's syndrome.

The data of our analysis allows us to agree with the opinion of a couple of authors that purulent facial and cervical inflammations, tumors, tonsillectomies and traumas of this area have influence on the development of Eagle's syndrome [4,11].

The diagnostics of Eagle's syndrome is basically based on typical clinical symptoms of the disease. In order to explain the condition of the stylohyoid apparatus, the following methods of radiological analysis are performed (we have modified most of them): 1) an overlook facial radiogram in the direct projection with the patient's mouth open; 2) facial diagonal contact roentgenogram; 3) facial side roentgenogram according to S. K. Zuberchuk; 4) sagittal tomography of the temporal mandible joint; 5) orthopantomogram.

RESULTS

With the help of radiological analysis we determined the localization and nature of disturbances. In many cases it was possible to evaluate the condition of the styloid process in overlook facial radiograms in the direct projection with the patient's mouth open. Nonetheless, in these radiograms it was not possible to evaluate the condition of the stylohyoid ligaments. Therefore, other radiological methods of analysis were applied. Radiological analysis data are provided in Table 4.

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Table 1. Patients' Distribution According to Sex and Age

Sex	Age (years)									
	16-44		45-59		60-75		More than 75		Totally	
	n	%	n	%	n	%	n	%	n	%
Women	13	20.0	17	26.7	28	43.1	7	10.2	65	67.1
Men	3	9.4	10	31.9	15	46.2	4	12.5	32	32.9
Totally:	16	14.7	27	29.3	43	44.65	11	11.35	97	100

Table 2. Patients' Distribution According to the Term of Disease

Sex	Term of Disease (years)									
	Up to 1 year		1-5		5-10		More than 10		Totally	
	n	%	n	%	n	%	n	%	n	%
Women	18	27.7	31	47.6	9	13.0	7	11.7	65	67.1
Men	11	34.3	13	40.5	5	15.6	3	9.6	32	32.9
Totally:	29	31.0	44	44.05	14	14.3	10	10.65	97	100

We divided patients into two groups in order to evaluate clinical symptoms and to determine their dependence upon the localization of disturbance.

The first group consisted of 62 patients suffering from Eagle's syndrome that were diagnosed with an elongated or deformed styloid process in the unhealthy side (Figure 1).

The second group consisted of 35 patients that were diagnosed with an elongated styloid process and an ossified stylohyoid ligament (Figure 2).

The most common clinical symptom of the first group patients was a spasmodic pain in the tonsils, arches of the palate, the soft palate, the root of tongue and the pharynx. The pain was sharp and of a shooting nature. Patients often describe it as "an electric shock". Fits of pain last from a few up to 20 seconds, for others they last from 1 to 2 minutes. Fits start spontaneously or they are provoked when speaking, eating, laughing or moving one's head.

In-between the fits part of patients feel as if having a foreign body (a bite) in one's pharynx, in the root of tongue. This paresthesia remains for quite awhile after the acute period of the disease is over. Provocative zones are one of the most characteristic clinical symptoms. Most often they are in the root of tongue, in the arches of the palate and in the tonsils; less frequently in the lateral cervical surface, mandibular area.

Part of patients has the sensations disordered in the last third of the tongue and in the soft palate (hyperesthesia or hypoesthesia). At the moment of a fit the second group of patients feels a sharp pain in the root of tongue, in the arches of the palate, in the tonsils, the hyoid area and in the lateral cervical part. Most patients feel the pain spread to the temple, others – to the eye, the ear, retroauricular and occiput areas. Pain is felt sharp and is of pulsatile nature in the lateral cervical part, in the temple, in mandibular and hyoid areas. The fits of pain last longer than to the first group patients, i.e. from a couple to some minutes. Most frequently, having disappeared from the root of tongue, from the palate and the pharynx, for some time pain is still felt in the neck and in the temple.

Provocative zones of the second group patients most frequently are located in the root of tongue and in the arches of the palate. Much more frequently than with the first group patients these zones are in the lateral cervical surface and in mandibular, retromandibular area. This group of patients has strong fits of dry cough or vertigo more often. During those attacks patients have consciousness blackouts. Patients feel pain when being palpated both the body and the branches of the carotid artery. This can provoke fits of pain and cough. We prescribed a conservative complex treatment to all 97 patients.

Table 3. Contiguous Diseases of Patients Suffering from Eagle's Syndrome

	Name of disease	Patients	
		n	%
1.	Cervical Osteochondrosis	62	63,9
2.	Atherosclerosis	26	26,8
3.	Hypertonic Disease and Arteriosclerosis	15	15,5
4.	Facial and Cervical Trauma	11	11,3
5.	Tonsillectomy	9	9,3
6.	Chronic Gastritis	8	8,3
7.	Facial and Cervical Tumors	7	7,2
8.	Diabetes Mellitus	6	6,2
9.	Inflammation of Maxillofacial Areas	6	6,2
10.	Gastric and Duodenal Ulcer	5	5,2
11.	Diseases of Urinary Organs	4	4,4
12.	Rheumatism	4	4,4
13.	Tuberculosis	4	4,4
14.	Multiple (Continuous) Sclerosis	3	3,1
15.	Pathology of the Stylohyoid Complex	72	74,2
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23.	Diabetes Mellitus	6	6,2
24.	Inflammation of Maxillofacial Areas	6	6,2
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**Figure 1.** Overlook facial radiogram in the direct projection. The right styloid process is elongated and thicker. The left styloid process is elongated and deformed.**Figure 2.** Overlook facial radiogram. The styloid processes of both sides are elongated, thicker and deformed; the stylohyoid ligaments are ossified.

Table 4. Patients' Distribution According to the Localization of Disturbance.

Sex	Disturbance of the styloid process		Disturbance of the styloid process and the styloid ligament		Totally:	
	n	%	n	%	n	%
Women	42	64,6	23	35,4	65	67,1
Men	20	62,5	12	37,5	32	32,9
Totally:	62	63,9	35	36,1	97	100

Table 5. Conservative Treatment Results

Patients' group	Patients treated	Good effect		Improvement		Inefficient	
		n	%	n	%	n	%
First	62	34	54,8	7	11,3	21	33,9
Second	35	17	48,6	9	25,7	9	25,7
Totally:	97	51	52,6	16	16,5	30	30,9

Scheme of a Complex Treatment

1. One of the main components of this treatment is the use of glucocorticosteroid hormones. Most frequently we prescribed hydrocortisone. 25 mg (1 ml) of this preparation were diluted with 1 ml 0.25% of lidocaine or other local anesthetic solution and injected close to the styloid process.

2. Anti-epileptic preparations compose the second component of a complex conservative treatment. On the first day 400 mg of carbamazepine (Finlepsin, Stazepin, Tegretol) are prescribed; later the dose is increased up to 600-800 mg. Such treatment lasts from 2 to 3 weeks.

3. Anti-histamine preparations. For example, 0.025 g of diprazine 3 times a day.

4. The supporting component consists of the medications widening the blood vessels, neuroleptics, antidepressants and tranquilizers.

The results of a complex conservative treatment were evaluated in the following way: *good effect* when fits of pain do not repeat; *improvement* when fits repeat rarely and the pain is not strong or nagging. The results of treatment are presented in Table 5.

Surgical treatment was applied to those patients for whom a conservative treatment appeared to be inefficient. 30 patients were operated on; out of them 21 women and 9 men. 21 patients belonged to the first group of the persons studied. The reason of their Eagle's syndrome was an elongated or deformed styloid process. A resection of the styloid process was applied to them. 9 patients had an elongated styloid process and an ossified stylohyoid ligament (the second group of patients). They underwent a resection

of both the styloid process and the stylohyoid ligament.

From 1 to 5 years after the surgery, out of 30 operated on patients 26 were feeling well, and fits of pain did not repeat. Respectively 24, 18, 16 and 12 months after the surgery 4 patients consulted repeatedly due to the recrudescence of paroxysmal pains.

CONCLUSIONS

1. Eagle's syndrome develops due to an elongation or deformation of the styloid process and "ossification" of the stylohyoid ligament. The development of this pathology is influenced by cervical osteochondrosis, frequent tonsillitis, tonsillectomy and purulent facial and cervical inflammations.

2. The clinic of Eagle's syndrome depends on the localization of disturbance. The analysis of clinical symptoms allows not only to diagnose the syndrome, but also to foresee a possible disturbance of the styloid process or the stylohyoid ligaments.

3. Radiological analysis is the basic method for the localization of the stylohyoid complex disturbance and the diagnostics of its nature.

4. A conservative complex method of treatment of Eagle's syndrome, which consists of such basic components as glucocorticosteroid hormones, anti-epileptic and anti-histamine preparations, is not efficient enough since after 6-12 months the disease recrudesces to most of the patients.

5. Best results of treatment are achieved when a surgical method of treatment is applied.

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Received: 02 02 2004

Accepted for publishing: 20 03 2004