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Results of Functional Endoscopic Sinus Surgery in Patients with Mucosal Contact Points Suffering From Chronic Daily Headache Non-Responding to Medications

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SUMMARY

Pain is a worldwide health disorder causing depression and decrease in daily activities, as well as cognitive, memory and attention impairments. In this regard, mucosal contact headache is a second type of headache disorder in the International Classification of Headache Disorders. Some studies have reported that contact points may work as triggers in the initiation of chronic daily headache.

The aim of the paper was to evaluate the effects of surgical removal of contact points on relief of chronic daily headache.

In this prospective study, thirty patients underwent functional endoscopic sinus surgery and the intensity of pain was examined by visual analogue scale (VAS) before and after a six-month follow-up.

Study population included 13 (43.3%) males and 17 (56.6%) females aged from 14 to 54 years, with mean age of 30 years. After surgical removal of contact points, the mean headache (days/month) was decreased from 8.3±6.5 to 1.5±1.7 days (P< 0.005). The length of daily headache was reduced from 3.5±3.1 hour/day to 36±0.8 minute/day. Based on the VAS pain rating scale, the severity of pain decreased from 5.2±1.8 (preoperative) to 1.47±1.3 (postoperative) (P:0.013). Nasal septal deviation was the commonest anatomical variation identified in these patients (21 subjects-70 %).

Surgical removal of contact points can improve the therapeutic outcomes in management of patients with chronic daily headache. These contact points may act as triggers for chronic daily headache.

Key words: **functional endoscopic sinus surgery, chronic headache, contact point**

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INTRODUCTION

Pain is one of the major public health problem causing depression and decrease in daily activities, as well as cognitive, memory and attention impairments (1-10).

Primary chronic daily headache is described as ≥15 headache days/month for more than three months in the absence of organic pathology (11).

The International Classification of Headache Disorders, second edition (ICHD-2) (12), and its appendix version (13), first established the division of chronic daily headache into: chronic migraine, chronic tension-type headache, new daily persistent headache and hemicrania continua. In this regard, mucosal contact headache is a second type of headache disorder in the International Classification of Headache Disorders (ICHD-2) (12).

Contact points might be a trigger for the initiation of primary headache (14-17). Stimulation of nasal mucosal receptors results in releasing of substance P in the central and peripheral nervous system (18, 19). This might be connected with calcitonin generelated peptide (19). In the central nervous system, both substance P and calcitonin generelated peptide are well-defined mediators in nocioceptive fibers (18).

In this relation, both finding a global response and therapeutic methods for chronic headache and the association of contact point and headache are not well -described. Therefore in this trial, we tried to find reliable management for chronic daily headache and establish the correlation of mucosal contact points with chronic headache.

PATIENTS AND METHODS

Ethics

The study population voluntarily participated in the investigation. Written consent was obtained from the participants for publication of the research results. All subjects signed consent forms in the presence of a witness for all evaluations and treatments applied.

Patients

A total of 30 patients were diagnosed with contact point headache at the Department of Otorhinolaryngology, Head and Neck Surgery. Subsequent checkups were performed before surgery regarding medical history, ENT (ear, nose and throat) evaluation, diagnostic nasal endoscopy, state and signs of allergy and computed tomography scan of the nose and paranasal sinuses.

Our exclusion criteria were inflammatory disorders like nasal polyps or mucopurulent discharge, hyperplastic mucosa, traumatic headaches, nonsinus headache reasons including migraine and vascular disorders, hypertension, neuralgias, cervical spine diseases, temporomandibular joint problems, high intracranial pressure and ophthalmic refraction disorders.

Diagnostic criteria

All of the subjects were examined for diagnostic criteria (inclusion criteria) regarding the chief problem of headache or facial pain reported as chronic, recurrent, excruciating, and/or disabling over the glabellar area and /or extending over the middle canthus area and/or supraorbital site unilaterally or bilaterally. Based on the nasal endoscopy or computed tomography of the paranasal sinuses, there were no signs of inflammation, mass and allergy. Normal evaluation was established by specialists in ophthalmology, neurology, cardiology, dentistry, internal medicine and normal cranial computed tomography. Report of mucosal contact regions associated with anatomic variants on endoscopy and computed tomography. The confirmation of diagnosis with if touching a suspected contact point inside the nasal cavity the pain of a likely nature occurred, and/or if the local application of lidocain solution to the suspected site with the aid of a cotton pledget or in the type of nasal spray (xylocaine 10%) decreased the pain within further 10-15 minutes (20).

VAS pain rating scale and surgical procedure

Pain levels were assessed by a visual analogue scale (VAS). The scale was contemplated as no pain on one end and maximum severity of pain on the other side (0 to 100 mm).

Functional endoscopic sinus surgery (FESS) was carried out under local application of anesthesia (1% lidocaine hydrochloride with 1:100.000 epinephrine). The endoscopic sinus operation procedure, elucidated in detail by Unlu HH et al. (21), was performed using Messerklinger's method and its minor alterations were proposed to remove the sections of the anatomical variants predisposing mucosal contact.

Follow-up and statistical analysis

Participants were followed for six months. Post-surgery VAS values were obtained at the end of six months. Values were presented as Mean±Standard deviation (SD). For statistical analysis, SPSS software (Version 15, Chicago, IL, USA) was used applying a paired T-test. $P<0.05$ was defined as significant.

Results

Study population included 13 male and 17 female examinees, aged from 14 to 54 years, with mean age of 30 years (Table 1).

The mean headache days/month was decreased from 8.3±6.5 to 1.5±1.7 days ($P<0.005$).The duration of daily headache was reduced from 3.5±3.1 (hour/day) to 36±0.8 (minute/day). Based on VAS pain

rating scale, the intensity of pain changed significantly from 5.2±1.8 (preoperative) to1.47±1.3 (postoperative) with P value of 0.013 (Table 2).

Twenty-six patients used analgesic before FESS; after FESS, the use of analgesic was significantly reduced to nine patients. In this regard, there was a significant reduction in cardinal symptoms including nausea and vomiting, photophobia and phonophobia pre- and postoperatively (Table 3).

Nasal septal deviation was the commonest anatomical variation in this series (21 subjects-70%). Concha Bullosa was identified in seven patients (23.33%) and paradoxical Concha was observed in two patients (Table 4).

Table 1. *Demographic data of the study population*

Patients	Male	Female	Age (Mean±Sd)	Range
Number	13 (43.33%)	17 (56.6%)	30±12.7	14 to 54

Table 2. *The outcomes of this investigation on various features of headache*

	Before FESS (mean±SD)	After FESS (mean±SD)	P-Value
Duration of headache (daily)	3.5±3.1(hour)	36±0.8(minute)	0.001
Number of days with headache	8.3±6.5(monthly)	1.5±1.7(monthly)	0.005
Level of pain (VAS)	5.2±1.8	1.47±1.3	0.013

Table 3. *Alterations in cardinal symptoms before and after functional endoscopic sinus surgery*

	Before FESS (patients)	After FESS (patients)	P-Value
Nausea and vomiting	9	0	0.033
Photophobia	9	1	0.033
Phonophobia	8	0	0.033
Analgesic	26	9	0.001

Table 4. *Anatomical variations in patients with rhinogenic contact point headache (bases on nasal endoscopy and CT)*

Anatomical variations	Patients	Percent (%)
Nasal septal deviation	21	70
Concha Bullosa	7	23.33
Paradoxical Concha	2	6.66

DISCUSSION

In this study, we examined the effect of surgical removal of mucosal contact points in the management of chronic daily headache. Treatment of chronic daily headache could be difficult with simultaneous medication overuse and comorbid depression (22).

Previous studies (14-17) have suggested that the mucosal contact points could be a trigger in the onset of chronic daily headache. These findings were crucial for us in the treatment of such patients. In this relation, Behin et al. (23) showed surgical management of nasal contact point in patients with refractory chronic migraine. If contact points exist and local anesthesia affects the headache, operational procedures seem to improve the results.

In this investigation, a total of 30 patients from the Neurology Department that were non-responders to medical treatment for chronic daily headache were referred to Otorhinolaryngology, Head and Neck Surgery Clinic, with sinus and nasal endoscopy and computed tomography scan evidence for mucosal contact points.

VAS pain rating scale was used for evaluation of pain severity before and after FESS. Our study revealed that the mean headache (days/month) was decreased from 8.3±6.5 to 1.5±1.7 days (P; 0.005). We observed the reduction in the duration of daily headache from 3.5±3.1 (hour/day) to 36±0.8 (minute/day). According to VAS pain rating scale, the severity of pain changed from 5.2±1.8 (preoperative) to1.47±1.3 (postoperative) (P: 0.013) (Table 2).

Tosun F et al. (24) studied the outcomes of nasal surgery for contact point headaches in 30 patients and revealed that total relief was observed in 43% and significant progression in 47% of the subjects after nasal endoscopic surgery. Devrim Bektas et al. (25) examined thirty-six patients (aged 17-58 years) with rhinogenic contact point headache, who underwent mini functional endoscopic sinus surgery. In their study, the intensity of pain was evaluated by visual analog scale (VAS), both pre- and postoperatively. They elucidated that all subjects experienced a postoperative decrease in the intensity of pain. Nineteen patients (52.7%) reported complete relief. In a similar way, our study revealed that surgical treatment of chronic daily headache caused by contact points seems to be better than medication.

Abu-Samra M et al. (26) studied 42 patients with chronic daily headache. They indicated that mean headache frequency was decreased from 22 to 7 days/month after removal of contact points. In the same way, the mean headache severity was decreased from 5.6 to 2.4. Eight (19%) participants had complete relief of headache. There was no improvement in seven (16.6%) patients, and only one patient (2%) suffered deterioration. Inconsistent with our study, all of the patients' pain severity improved after FESS.

Behin F et al. (27) reported that nasal septal deviation with a contact point may cause episodic or daily headache. In this relation, this study also indicated that nasal septal deviation was the most common type of anatomical variation in these patients (Table 4).

CONCLUSION

Functional endoscopic sinus surgery of contact points can improve the therapeutic results in the management of patients with chronic daily headache. These contact points may act as triggers for chronic daily headache. Altogether, more researches are required in order to confirm the association of chronic daily headache and contact points.

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REZULTATI FUNKCIONALNE ENDOSKOPSKE HIRURGIJE SINUSA KOD BOLESNIKA SA MUKOZALNIM KONTAKTNIM TAČKAMA KOJI PATE OD HRONIČNE DNEVNE GLAVOBOLJE NA KOJU NE UTIČU LEKOVI

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Sažetak

Bol je široko rasprostranjeni poremećaj koji dovodi do depresije i smanjene dnevne aktivnosti, kao i do poremećaja pažnje, pamćenja i kognitivnih procesa. U tom smislu, glavobolja zbog sluzokožnih priraslica je drugi tip glavobolja po Međunarodnoj klasifikaciji glavobolja. Neke studije su pokazale da kontaktne tačke mogu da se ponašaju kao okidači za početak hronične dnevne glavobolje.

Cilj rada bio je procena efekata hirurškog uklanjanja kontaktnih tačaka na ublažavanje hronične dnevne glavobolje.

U ovoj prospektivnoj studiji, funkcionalnoj endoskopskoj hirurgiji sinusa bilo je podvrgnuto 30 bolesnika, a intenzitet bola bio je procenjen pomoću vizuelne analogne skale (VAS) pre i nakon šestomesečnog praćenja.

Studija je uključila 13 (43.3%) muškaraca i 17 (56.6%) ženskih ispitanica uzrasta od 14 do 54 godine, sa prosečnom starošću od 30 godina. Nakon hirurškog uklanjanja kontaktnih tačaka, prosečno trajanje glavobolje (dani/mesecu) smanjeno je od 8.3±6.5 dana na 1.5±1.7 dana (P<0.005). Trajanje glavobolje u toku dana bilo je smanjeno od 3.5±3.1 sati/danu na 36±0.8 minuta/danu. Na osnovu VAS skale za procenu bola, intenzitet bola je smanjen od 5.2±1.8 (pre operacije) na 1.47±1.3 (posle operacije) (P:0.013). Devijacija nazalnog septuma je najčešća varijacija utvrđena kod ovih bolesnika (21 bolesnik - 70%).

Hirurško uklanjanje kontaktnih tačaka može da poboljša ishod terapije u lečenju bolesnika sa hroničnom dnevnom glavoboljom. Ove kontaktne tačke se ponašaju kao okidači za hroničnu dnevnu glavobolju.

Ključne reči: **funkcionalna endoskopska hirurgija sinusa, hronična glavobolja, kontaktna tačka**