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Intracranial hemorrhagic infarct after local anesthesia on nasal mucosa: A case report



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ABSTRACT

INTRODUCTION: Epinephrine containing local anesthetics are used hemostasis in many cases. Otolaryngologists typically selected to decrease bleeding in surgery field for operations such as especially FESS (Functional Endoscopic Sinus Surgery), septoplasty, septorhinoplasty. In addition to known adverse effects of this local anesthetics agents they have rare complications too.

PRESENTATION OF CASE: We presented intracranial hemorrhagic infarction in a 41-year-old male patient after using lidocaine with epinephrine for local anesthesia on nasal mucosa.

DISCUSSION: There are some publications like this case in the literature. In our case, a hemorrhagic infarction developed after giving the adrenaline/lidocaine infiltration to make up a local anesthesia in the mucosa of the septum. There is not any reported case like this in the literature.

CONCLUSION: We want to emphasize that all surgeons especially the ENT surgeons should be careful while using local anesthetic medicines which contains adrenaline for rare complication of intracranial hemorrhagic infarction. Another fact is that the patients must sign an informed consent form including those situations even for all minor surgical procedures to avoid a medicolegal problem.

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1. Introduction

Recently, the operations as septoplasty, septorhinoplasty and endoscopic sinus surgery have been frequently performed by the otolaryngologists. These operations can be done under general anesthesia, local anesthesia or sedoanalgesia. Whichever method of anesthesia is used, agents as adrenaline are infiltrated to nasal mucosa in different percentages in surgical area for bleeding control and vasoconstriction. In this case, we aimed to report a patient that the septorhinoplasty surgery was done six months ago, and had hemorrhagic infarct in basal ganglia which was occurred after suturation of the plica in anterior nasal septal mucosa with an absorbable suture material in local anesthesia.

2. Presentation of case

A 41-year-old male patient with complaints of nasal obstruction and snoring came to our clinic six months ago. There were septal deviation, inferior turbinate hypertrophy and nasal valve collapse in clinical examination. The patient did not have any

known co-morbidities such as hypertension or other cardiovascular disease. The patient had smoked a packet of cigarette a day for thirty years. Open technique septorhinoplasty operation was decided to do because of solving nasal obstruction. Septorhinoplasty operation was performed under general anesthesia. In this operation, 8 ml of Lidocaine HCl (20 mg/ml) with epinephrine HCl (0.0125 mg/ml) was infiltrated to the submucoperichondrium of septal nasal mucosa, nasal dorsum and nasal tip region, using dental needle. After the operation, there was no problem. In the patient's sixth month control, it was seen that a plica in anterior nasal septal mucosa caused nasal blockage in both sides. To open the nasal blockage, interseptal suturation of nasal septal mucosa was decided. 2 ml of Lidocaine HCl (20 mg/ml) with epinephrine HCl (0.0125 mg/ml) was infiltrated to submucoperichondrium of anterior septal nasal mucosa of the patient using dental needle under local anesthesia in operation room. The patient felt severe headache during infiltration of the local anesthetic agent. A little pain is accepted as a normal situation during infiltration of the local anesthetic agent, so we waited for a few minutes to have the effect of the local anesthetic agent. The headache had decreased and the suturation was made to anterior septal mucosa with an absorbable material. Then the operation was finished. The patient was consulted by the clinic of neurology because of speech disfluency, being lethargy and sleepy after taken to the care service 5 min later than the operation. Approximately 20 min later the injection of local anesthetic, neurological symptoms occurred. The findings

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Table 1
After lidocaine with epinephrine administration, some adverse events in literature.

Authors	Adverse events
Yang et al. [1]	Transient systemic blood pressure increase and hemodynamic alterations in FESS (functional endoscopic sinus surgery) patients in 4 min.
Demirtaş et al. [2]	Slight to mild degree short term tachycardia, used for rhinoplasty operations
John et al. [3]	All patients showed increasing plasma epinephrine concentration throughout 4 min.
Maaranen et al. [5]	A central retinal artery occlusion after local performing of adrenalin solution to nasal mucosa during surgery of lacrimal duct in 75 years old patient.
Yakoubi et al. [6]	Eye lid necrosis, after performing aesthetically surgery in 4 patients.
Midilli et al. [7]	Transient diplopia after local septal infiltration anesthesia during septoplasty operation in two cases.



Fig. 1. Image of hemorrhagic infarction in left basal ganglia in CT.

of right hemiparesis were seen in neurologic examination and cranial CT scan was taken. There was hemorrhagic infarction that was primarily thought to be hypertension in left basal ganglia region in cranial CT scan and the patient was taken to neurology intensive care unit in emergency for treatment and stayed there for five days (Fig. 1). During follow up blood pressure measurements and biochemical test results were within the normal range. Decongestants in the form of furosemide, 20% mannitol and antiepileptic agent phenytoin sodium were given for treatment. He was continued ventilator supporting with BPAP for four days, hemorrhage limited itself, infarct area and edema regressed on the fifth day. A Gadolinium enhanced magnetic resonance imaging (MRI) was done on the seventh day of operation, showed no abnormality of cerebral vessels. His symptoms and signs subsided with medical treatment. The supportive treatment continued at the neurology clinic after the sixth day. The patient healed with right hemiparesis sequela. Both operations were performed by the over ten year-experienced surgeon in otorhinolaryngology. Written informed consent form was obtained from the patient who participates in this study.

3. Discussion

Local anesthetics containing epinephrine is used for hemostasis in many cases [1]. The effect of lidocaine/epinephrine on systemic hemodynamic was studied by Demirtaş et al. [2]. John et al. reported that, after epinephrine 1/80.000 with 2% lidocaine injection; all patients had showed increasing plasma epinephrine concentration for 4 min [3].

Yang et al. [1] reported the increase of transient systemic blood pressure and hemodynamic alterations in FESS patients after performing epinephrine (1:200.000) consisting 2% lidocaine or saline solution in 4 min [4]. Maaranen and Mäntyjärvi [5] reported a central retinal artery occlusion after performing adrenalin solution to nasal mucosa during the surgery of lacrimal duct. Yacoubi et al.

reported eye lid necrosis after performing 2% lidocaine/epinephrine aesthetically on 4 patients [6]. Midilli et al. [7] reported transient diplopia after local septal infiltration anesthesia during the septoplasty operation in two cases.

Table 1 After lidocaine with epinephrine administration, some adverse events in literature. There are some publications like this in the literature. In our case, a hemorrhagic infarction developed after giving the adrenaline/lidocaine infiltration to make up a local anesthesia in the mucosa of the septum. There is not any reported case like this in the literature. Most of the basal ganglia bleeding are dependent to hypertension. The patient's pre-operative stress and local anesthetic infiltration by increasing the blood pressure can result in a possible intracranial bleeding. The incidence of spontaneous intracranial bleeding is approximately 12–15 in 100.000 people [9]. In the spontaneous intracerebral bleeding hypertension is the main risk factor and accompanies % 60–70 of the cases. The risk is increased in smokers and in people who incompatible with the treatment. Spontaneous intracranial bleedings which can be associated with the brain parenchyma, intraventricular and subarachnoid space are sudden and nontraumatic events. Primary spontaneous intracerebral bleeding (PAIN) which constitutes % 78–88 percent of the cases usually occurs with spontaneous ruptures of little arteries or arterioles that are damaged due to the chronic hypertension or amyloid angiopathy. Hypertension, amyloid angiopathy, arteriovenous malformation, intracranial aneurysm, cavernous angioma, venous angioma, sinus thrombosis, intracranial tumor, coagulopathy, vasculitis, using cocaine or alcohol are the main causes of secondary intracranial bleeding. Hypertensive spontaneous intracerebral bleeding is characteristically occurred in basal ganglions (putamen, thalamus, nucleus caudatus), pons, cerebellum or deep hemispheric regions. According to the participation of internal capsule varying severity contralateral sensorimotor deficit is emerged in patients with supratentorial intracerebral bleeding which includes the basal ganglions [10].

4. Conclusion

In this case, blood pressure was not monitored because the patient had no known history of hypertension and the local anesthesia was performed in surgical procedure. Though the surgery was short and made with local anesthesia, patient's vital findings had to be followed. We want to emphasize that all surgeons especially the ENT surgeons should be careful when using local anesthetic medicines which contains adrenaline. Another fact is that the patients must sign an informed form including those situations even for all minor surgical procedures to avoid a medicolegal problem.

Conflicts of interest

None of the authors have any conflicts of interest to declare.

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Ethical approval

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Authors contribution

Dr. Koçyiğit—article conception, image creation, literature review, writing the article and editing the article. Dr. Giran Ortekin—article conception, writing the article and editing the article. Dr. Yaslıkaya—image creation, writing the article and editing the article. Dr. Akpınar—writing the article and editing the article.

Guarantor

Dr. Koçyiğit will act as the guarantor for this article.

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