



Transient Facial Nerve Palsy After the Scalp Block for Burr Hole Evacuation of Subdural Hematoma

Subdural Hematomun Burr Holle İle Boşaltılması İçin Uygulanan Skalp Bloğundan Sonra Gelişen Geçici Fasyal Sinir Felci

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Scalp block has become a frequently used technique with an increasing number of indications today. Despite the many advantages of the scalp block, certain rare complications have been identified. It should be remembered that although it is a relatively safe procedure, it may lead to the development of facial nerve palsy. In this article, we present a case of transient facial nerve palsy developed after the scalp block that was used to drain the subdural hematoma with a burr hole.

Keywords: Scalp block, subdural hematoma, facial nerve palsy

Skalp bloğu günümüzde giderek artan endikasyonlarla sıkça kullanılan bir teknik haline gelmiştir. Skalpe bloğun pek çok avantajına rağmen nadir komplikasyonları tanımlanmıştır. Nispeten güvenli olmasına rağmen fasyal sinir felcinin gelişebileceği unutulmamalıdır. Bu makalede, subdural hematomun burr holle ile boşaltılması için uygulanan skalp bloğundan sonra geçici fasyal sinir felci gelişen bir olgu sunulmaktadır.

Anahtar Kelimeler: Skalpe bloğu, subdural hematom, fasyal sinir felci

Introduction

Scalp block has become a frequently used technique with an increasing number of indications today. Although the scalp block was initially preferred in patients with a high risk of general anaesthesia complications, it was also preferred to achieve the hemodynamic control and functional observation during the operation. (1). The scalp block is indicated in intracranial surgeries and chronic headaches, but it is also preferred in many extracranial procedures (2). As described by Pinosky et al. (1), six nerves are identified by landmarks on each side of the cranium (supratrochlear, supraorbital, zygomaticotemporal, auriculotemporal, lesser occipital and greater occipital nerves), and they are subsequently infiltrated with a local anaesthetic dose ranging from 2 to 5 mL.

For successful anaesthesia, careful management of patient's co-operation, gentle surgical manoeuvres and communication of the anaesthetist with the patient are important (3). As with any procedure, the scalp block has potential complications. The local anaesthetic toxicity, severe bradycardia, hypertension and inadvertent subarachnoid injection have been reported (4). However, the facial nerve palsy after scalp blocks is a very rare complication.

In this article, we describe transient postoperative facial nerve palsy as a complication of the scalp block in a patient undergoing burr hole evacuation of subdural hematoma.

Case Presentation

A 63-year-old man, weighing 75 kg, was scheduled for an evacuation of subdural hematoma. According to the American Society of Anesthesiologists classification, the patient was assigned status 2 because of his hypertension. In the preoperative evaluation of the patient, it was learned that 3 months before, he was involved in a car accident outside of the vehicle and suffered a head trauma related to it. In the evaluation by the emergency department of the patient after the accident, a cranial

tomography did not reveal any abnormalities. Further, the neurological examination was considered to be normal. Three months after the accident, the patient was admitted to the neurosurgery clinic reporting weakness, dizziness and numbness in the arms. A subdural hematoma was detected after the cranial tomography imaging (Figure 1), and the patient was taken to the operation room for burr hole evacuation of subdural hematoma. The blood test results, electrocardiogram (ECG) and chest X-rays showed no alterations. After discussing the options and explaining the risks and benefits of general anaesthesia versus regional anaesthesia, and with informed consent from the patient, it was decided to proceed with the scalp block. The patient was expected to fast 6-8 hours before surgery, and he was not premedicated. Routine monitors (consisting of a pulse oximeter, 3-lead ECG and a non-invasive blood pressure cuff) were applied. 2 mg midazolam was administered before the scalp block procedure. The supratrochlear, supraorbital, zygomaticotemporal, auriculotemporal, greater and lesser occipital nerves were blocked using the technique described by Pinosky et al. (1) with 2.5 mL of a local anaesthetic (0.5% bupivacaine) used to block the nerves separately. The oxygen was provided through a facial mask at 3 L min⁻¹ with end-tidal carbon dioxide monitoring. The surgical procedure started following the scalp block. The patient was awake during the operation and able to speak and move his limbs on verbal commands. The surgery lasted for 1h, and no complications developed during the operation. During the operation, there were no additional sedating agents and local anaesthetics requirements. However, unilateral facial nerve palsy in the patient was noted before the transfer from the operation room to the post-anaesthesia care unit (PACU). After the surgery, the patient was transferred



Figure 1. Cranial tomography showing subdural hematoma

to the PACU, where he remained hemodynamically stable. Unilateral facial nerve palsy was still present in the PACU. A close follow-up of the facial nerve palsy was performed, and it was completely absent on the postoperative 6th hour. During the discharge of the patient from the hospital, there were no neurological deficits present, including the facial nerve palsy.

Discussion

In this case, we describe postoperative transient facial nerve palsy in a patient after the scalp block for burr hole evacuation of subdural hematoma.

The scalp block has increasingly become a widely used technique in various indications. One of the most important reasons for its popularity is the hemodynamic stability in patients who receive it and decreased morbidity. Despite the advantages that have been reported so far (5-7), the use of local anaesthetics in these procedures produces the risk of all complications related to local anaesthetic agents. Chawdhury et al. reported severe bradycardia during the scalp block, considering the trigeminal cardiac reflex as the cause of this finding. Transient facial nerve palsy is a rare complication after the scalp block and was reported in only two articles in the literature (8, 9). First, transient facial nerve palsy was reported previously after scalp blocks performed under general anaesthesia for a craniotomy (9), and a patient series have reported an undesired fascial nerve block at a rate of 8.6% as being the complication of the auriculotemporal nerve block, which is a component of the scalp block, by McNicholas et al. (8).

We may think that the facial nerve paralysis may occur after the scalp block because of the close proximity of the facial nerve and the auriculotemporal nerve, as described by Pinosky et al. (1). Shorter than the other cases shown in the literature, duration of the postoperative facial nerve palsy in our case was 6 hours. To avoid this complication, Bebawy et al. (10) recommended an alternative method involving the introduction of the needle 1 cm superior to the level of the tragus and posterior to the superficial temporal artery, and decreasing the volume of the local anaesthetic agent to 3 mL.

Other possible causes for facial palsy following the auriculotemporal nerve blockade include a mechanical injury of the facial nerve during blockage of the auriculotemporal nerve, compression of the nerve from a hematoma, oedema, or the pressure of a local anaesthetic injection and vasoconstriction-induced neural ischaemia could potentially result from the addition of epinephrine to the local anaesthetic solution (11). However, in our case, hematoma or oedema did not develop, and the proximity of the anatomic structures could be a possible cause of transient nerve paralysis. In addition, since light sedation was used in our case, our patient could express pain during the development of the nerve damage during the scalp block. As suggested by the American Society of Regional Anaesthesia and Pain Medicine with regard to peripheral

nerve blocks (12), performing scalp nerve blocks on patients who are awake or lightly sedated and able to communicate facilitates a neurological examination after the scalp nerves are blocked and before the start of the surgical procedure.

In view of the future of the scalp block, the use of the ultrasound (US) guidance can be anticipated with a widespread use of US in the practice of peripheral and selective nerve blockade. Although some components of this block are performed under the US guidance (13-15), the use of US has not become a routine practice in the scalp block. The researchers of the current study consider that the scalp block will be a safer procedure with the use of US guidance in near future. Thus, we believe that these complications may be reduced by using US.

Conclusion

As long as the scalp block is made by experienced clinicians, it is the ideal anaesthetic approach for operations such as awake craniotomies. Although the scalp block is relatively safe, it should be remembered that the facial nerve palsy may develop afterwards. Bebawy et al.'s (10) recommendation (an alternative method involving the introduction of the needle 1 cm superior to the level of the tragus and posterior to the superficial temporal artery and decreasing the volume of the local anaesthetic agent to 3 ml) can prevent the facial nerve palsy after the scalp block.

Informed Consent: Written informed consent was obtained from patient who participated in this case.

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