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AWAKE CRANIOTOMY FOR EXCISION OF INTRACRANIAL MASS- A CASE SERIES.

Anesthesiology

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ABSTRACT

Awake craniotomy is a newer method of anaesthesia for surgeries done near the eloquent areas of brain. Intraoperative monitoring of speech, motor and sensory testing is done with a goal of maximum tumour resection while preserving normal tissue which is not possible with routine general anaesthesia. This helps to prevent resecting the functional part of brain. This is a case series of awake craniotomy under awake-awake-awake technique for intracranial mass resection

KEYWORDS

INTRODUCTION:

Davidoff in 1934 began to combine local anaesthesia and sedation. Wilder Penfield used sedation following mild electric current to locate the source of seizure activity and could potentially remove or destroy the specific cerebral tissue.[1] In 1988, Archer studied 354 awake craniotomies for cortical resection of epilepsy using local anaesthesia and intravenous fentanyl and alfentanil.[2] The benefit of awake craniotomy is that it allows for intra operative monitoring of speech, motor, and sensory testing, with the goal of maximum tumour resection while preserving normal brain tissue.[1,2,3,4]

Modern anaesthetic approaches may be generally divided as follows: Monitored anaesthesia care, asleep-awake-asleep (AAA)[4] and awake-awake-awake. Monitored anaesthesia care is a specific anaesthetic protocol that includes careful monitoring and support of vital functions. Not all patients are fit for awake craniotomy. Patient selection is done by a team comprising of a neurosurgeon, neurologist, neurophysician and anaesthesiologist. Awake craniotomy is used in patients with supratentorial tumours, arterio-venous malformations, deep brain stimulation, and mycotic aneurysms near critical regions of brain [5, 6, 7, 8]. We report a case series of awake craniotomy for tumour resection. In scalp block, the following nerves are blocked: supraorbital nerve, supratrochlear nerve, auriculotemporal nerve, zygomaticotemporal nerve, greater occipital nerve and lesser occipital nerve [3-8]. We present two cases of awake craniotomy done by blocking the scalp nerves under ultrasound guidance.

Case report 1.

History: A 34year old male patient weighing 70kg with no associated systemic disease presented with sudden onset of seizures. He was diagnosed to have a right frontal glioma and was started on oral phenytoin 200mg once daily and oral levetracetam 500mg thrice a day for three months. His blood investigations, ECG, X -ray chest were within normal limits.

Intra operative management: In the operating room an intravenous line was started and he was connected to a multipara monitor displaying ECG, SpO_2, NIBP and temperature. A bolus dose of 70 µg dexmedetomedine (1µg/kg) was administered intravenously over 30mins. Scalp block were performed on the right side of scalp under the ultra sound guidance with 3-5ml of 0.25% bupivacaine for each nerve. The nerves blocked were supraorbital nerve, supratrochlear nerve, zygomaticotemporal nerve, auriculotemporal nerve, lesser occipital nerve and greater occipital nerve. Intravenous dexmedetomedine was started at 0.3microgram/kg/hr after the bolus. Surgery was started after checking the surgical incision site for sensory block. Throughout the intra operative period, his heart rate and blood pressure were stable. The tumour resection lasted for an hour. He was comfortable, alert and cooperated throughout surgery, He remembered the intra operative events. He stated that he was comfortable throughout the procedure. The post-operative period was uneventful.

Figure: Scalp block for awake craniotomy.

Case report 2

History: A 26 year old female patient weighing 52kg with no other co morbid disease was posted for resection of frontal lobe glioma. She was on oral phenytoin 200mg once daily prior to the procedure. Her blood investigations, ECG, X -ray chest were within normal limits. She was posted for awake craniotomy and resection of mass.

Intra operative management: In the operating room an intravenous line was started and she was connected to a multipara monitor displaying ECG, SpO2, NIBP and temperature. A bolus dose of 52 µg dexmedetomedine (1µg/kg) was administered intravenously over 30mins. Scalp block was performed on the left side of scalp under USG guidance with 3-4ml of 0.25% bupivacaine for each nerve. The nerves blocked were supraorbital nerve, supra trochlear nerve, zygomaticotemporal nerve, auriculotemporal nerve, lesser occipital nerve and greater occipital nerve. Intravenous dexmedetomedine was started at 0.3microgram/kg/hr after the bolus. Surgery was started after checking the surgical incision site for sensory .She was haemodynamically stable throughout the procedure and was comfortable. The surgery lasted for eighty minutes. She was comfortable and alert throughout surgery and remembered the intra operative events. She was shifted to the post operative care unit and her postoperative period was uneventful.

DISCUSSION:

All anaesthetic techniques for managing awake craniotomy are to allow resection and/or neurological functional mapping with greater protection of areas of brain that control both motor function and speech. The fundamental idea of awake-awake-awake craniotomy is the effective avoidance of pain due to head fixation and craniotomy by scalp block. The possibility is to carefully position the patients and to find the best and most comfortable position prior to craniotomy. In our patients, we opted for conscious sedation with nerve blocks (awake---awake---awake technique). During craniotomy and brain exposure, the challenges are to provide sedation, anxiolysis and optimal

analgesia and to avoid hypoxaemia, hypercapnia, seizures and haemodynamic instability.

CONCLUSION:

We performed awake- awake- awake technique of awake craniotomy in our patients and it proved to be an excellent option for complete resection. Intraoperative neurophysiologic monitoring was done to identify sensitive brain tissue. The patients remained alert with stable haemodynamics throughout procedure.

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