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Supratentorial intracerebral hemorrhage as a complication of infratentorial tumor removal: A case report

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ABSTRACT

INTRODUCTION: In this article we report a case of supratentorial intracerebral hemorrhage developed following days of posterior fossa surgical tumor removal.
PRESENTATION OF CASE: Nine years old female was diagnosed as a patient with posterior fossa tumor and hydrocephalus, endoscopic third ventriculostomy was done and the tumor was resected using craniectomy and trans-vermian approach. The patient was discharged home on post-operative day 10 but re-admitted on day 35 with a new insult of right temporo-parieto-occipital intracerebral hematoma which was evacuated successfully urgently and the patient had got better on day 4, but then she developed right hemispheric ischemia and died.
DISCUSSION: Although this complication is rare, it carries significant morbidity and mortality, literatures discussing this condition are scanty and no obvious cause was mentioned.
CONCLUSION: We recommend putting in mind such a complication in case of any post-operative neurological deterioration occurs to a patient with surgically excised posterior fossa lesion.

1. Introduction

Intracerebral hemorrhage (ICH) at the operative site is one of the major complications of brain surgery [1]. It is rare to occur at a site remote from the operative site, but when happens; it may cause significant morbidity and mortality [2]. It is easily diagnosed nowadays with the advances of imaging studies. In this article we report a case of supratentorial ICH developed following days of posterior fossa surgical tumor removal.

This work has been reported in line with the SCARE criteria [3].

2. Case description

Nine years old female presented with 3 months history of headache, unsteady gate, and vomiting, on examination she had nystagmus, ataxia, dysdiadochokinesia, positive finger-nose test. History taken from the patient and his relatives revealed no past medical or surgical history, normal psychosocial history, no known congenital diseases or genetic disorders affecting the family, the drug history was negative. Magnetic resonance images (MRI) showed posterior fossa tumor with hydrocephalus (as shown in Fig. 1-a), the decision was made to perform endoscopic third ventriculostomy (ETV) to treat hydrocephalus. It was done through a burr-hole 2.5 cm to the right of midline and 1 cm anterior to the coronal suture. The patient's condition was improved and was free of symptoms. MRI was done again to evaluate the ventricles and showed a good response to ETV. Elective microsurgical procedure was arranged after 2 weeks from the ETV to remove the tumor. The patient was put in prone position and craniectomy with trans-vermian approach was performed, the tumor was removed totally and the patient was recovered and kept in intensive care unit (ICU), she was fully conscious. The histopathology of the tumor revealed medulloblastoma. The patient developed cerebellar mutism (which was improved on day 14) and left facial palsy, then she was transferred to the ward, kept under observation for 10 days, then CT scan was done and showed total tumor removal (Fig. 1-b).

The patient was referred to the oncologist to begin the regimen of chemotherapy and/or radiotherapy. On post-operative day 35, she was admitted in the emergency room with unconsciousness and left side weakness, no history of head trauma. CT scan was done and showed large right temporo-parieto-occipital intracerebral hematoma (as shown in Fig. 1-c). The patient was sent for laboratory tests, the investigations were normal, the patient was vitally stable, and she was prepared for urgent surgery for hematoma evacuation. The hematoma was evacuated totally simply through right parietal craniotomy without revealing any vascular malformation.

Abbreviations: ICH, intracerebral hemorrhage; CT, computerized tomography; MRI, magnetic resonance imaging; ETV, endoscopic third ventriculostomy; ICU, intensive care unit; GCS, Glasgow coma scale.

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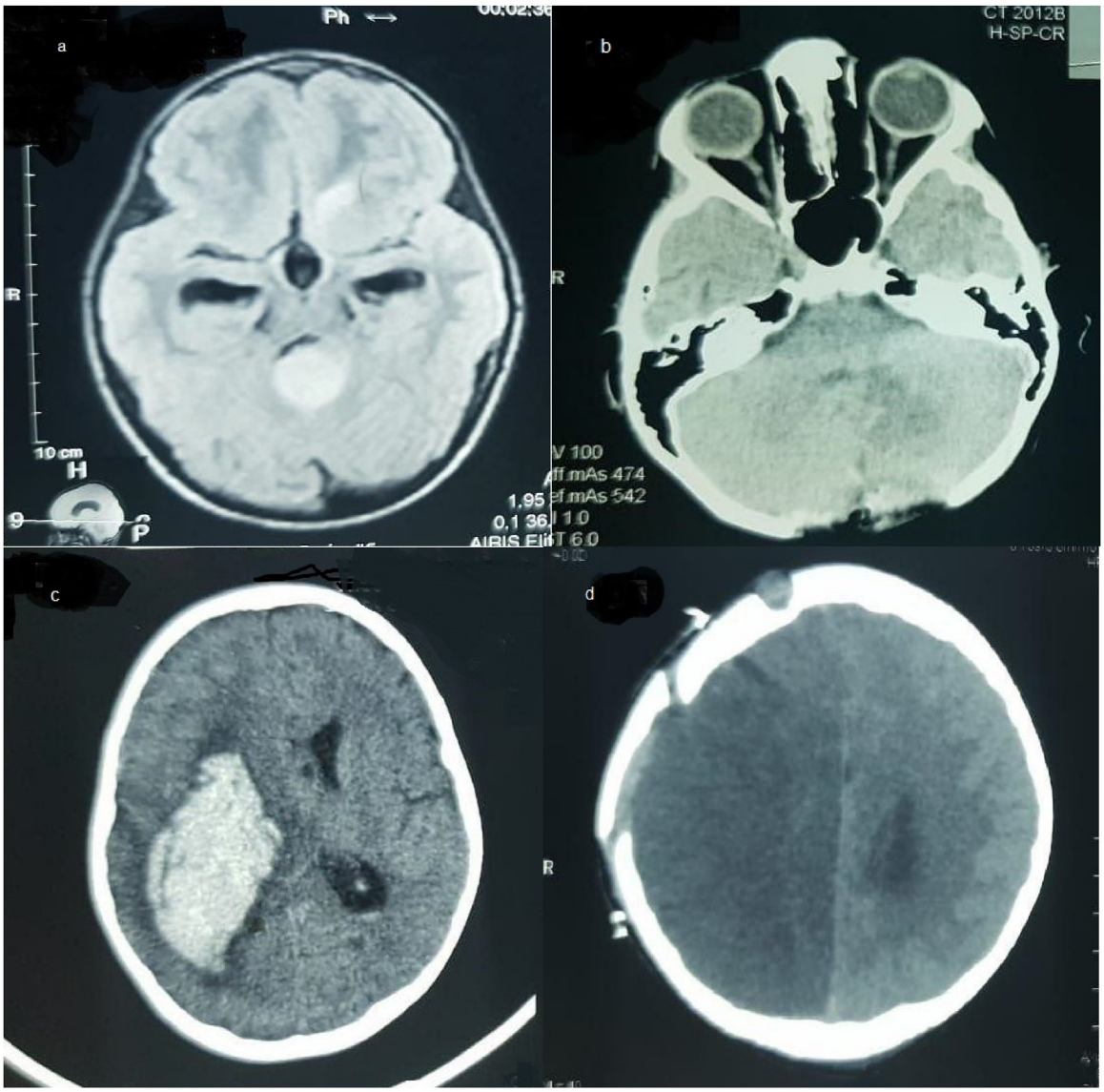

Fig. 1. a: Brain MRI shows posterior fossa tumor with hydrocephalus. b: Brain CT scan shows a totally removed tumor with craniectomy after 10 days of surgery. c: Brain CT scan reveals right temporo-parieto-occipital ICH on post-operative day 35. d: An extensive right hemispheric ischemia was discovered on day 9 after evacuation of ischemia.

Post-operative CT scan showed total removal of the hematoma, the patient was improved totally on day 4 after the second surgery and the weakness was subsided. All of the previous operations were done by our neurosurgery team. At day 9 her condition was deteriorated and the consciousness was lost, GCS was 7/15, she was admitted in the ICU, CT scan showed a large right hemisphere ischemia with hemorrhage (Fig. 1-d). She died 3 day after ICU admission.

3. Discussion

In our case, a right supratentorial ICH occurred after craniectomy of posterior fossa to remove medulloblastoma; it is a rare complication but unfortunately was associated with high morbidity and mortality rate [4]. The literatures discussing such a complication are scanty; actually no obvious cause was mentioned in these literatures. The first report was in 1972 by Haines et al. when they discussed four ICH cases occurred immediately following posterior fossa procedures. The patients had no coagulopathy or other predisposing factors [2]. After many years, Harders et al. published a report of supratentorial ICH as a complication of infratentorial surgery in 1980. They reported three patients who developed this complication after surgery for posterior fossa lesions. Again the authors did not mention predisposing medical condition for this complication [5]. In a study published by Tondon and Mahatra, they discussed two patients with supratentorial hematoma following posterior fossa surgery, they found coagulopathy in hematology profile in both of them, so in that report the cause is known [6]. In the report of Seiler and Zurbrugg, two hypertensive cases of acoustic schwannoma developed hematoma [7]. In a study of Standefer et al., hypertension was the cause one of the two cases mentioned in their report [8]. Waga et al. also have reported one case each of supratentorial hematoma following suboccipital craniectomy [9]. Finally; in 2015, de Albuquerque LA et al. reported a case of posterior fossa ependymoma who developed multiple supratentorial intracerebral bleeds despite having no medical history [10].

In most of these reports, the authors had mentioned that the operative position was sitting, that is why Tondon and Mahapatra suggested performing prone position in posterior fossa surgeries to decrease the probability of supratentorial ICH [6]. On the other hand, hyperperfusion state had resulted when changing the oper-

ative sitting position into post-operative supine. Also most of hematomas occurred soon or after hours of their surgeries.

The result of our report is different, our patient had neither hypertension; nor coagulation disorder, the operative position was prone, and the hematoma was developed after many days of surgery. In addition, the pre-operative imaging showed no intracranial vascular malformation. According to the previous studies, we believe that the type of tumor (medulloblastoma) has no relation to this complication. Despite the rarity of this complication, it is still challenging as it may lead to significant morbidity and mortality. Regarding the hemispheric ischemia, we think that arterial vasospasm of the right middle cerebral artery occurred as a result of the hemorrhage and irritation of the vessels.

4. Conclusion

In patients with posterior fossa surgeries, if the patient's clinical condition worsens or develops new symptoms soon post-operatively or days after it; supratentorial ICH should be suspected, a careful neurological examination, laboratory tests, radiological imaging, and prompt management should be done to get the best outcome.

Declaration of Competing Interest

The authors declare no conflict of interest.

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Ethical approval

The study is exempt from ethical approval in my institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of written consent is available for review by Editor-in-Chief of this journal on request.

Author's contribution

Ghazwan Lafta: writing the manuscript, study design, final review.

Ali Dolachee: data collector, writing the manuscript.

Guarantor

Ghazwan Lafta is the guarantor and accepts full responsibility.

Provenance and peer review

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