

CASE REPORT

Tranexamic acid may be beneficial for difficult hemostasis following tumor resection in neurosurgical patients: A personal experience

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ABSTRACT

Neurosurgeons may find themselves in a precarious situation, while unable to secure hemostasis following tumor resection. Use of tranexamic acid was helpful in our patient to secure complete hemostasis in one such event of uncontrollable bleeding.

Key words: Difficult hemostasis, pituitary tumor, surgical resection, tranexamic acid

Introduction

The neurosurgical patients are at increased risk of bleeding following traumatic brain injury (TBI), subarachnoid hemorrhage (SAH) as well as during intracranial surgery. The role of tranexamic acid has been evaluated in patients with TBI and SAH.^[1,2] However, its role in intraoperative intracranial bleeding has only been recently reported in a pediatric patient.^[3] We report another case of giant pituitary adenoma in an adult patient, whereby an uncontrollable bleeding despite repeated attempts to achieve hemostasis was successfully managed with the use of tranexamic acid.

Case Report

A 40-year-old female patient presented with bilateral paraplegia, decreased vision in right eye and urinary incontinence since 1-month. She was delirious since 2 weeks. The patient was on oral amlodipine 5 mg once daily for hypertension and on thyroxine 100 µg once daily for hypothyroidism. She also had associated hypocortisolism and hypogonadism. Magnetic

resonance imaging scan of the brain showed a homogenous contrast enhancing mass measuring 7.0 × 5.0 × 6.0 cm arising in the sellar area with extension up to lateral and third ventricle [Figure 1a]. Computed tomographic (CT) angiogram revealed a large lobulated sellar mass with suprasellar extension causing mass effect on adjacent structures and displacement of bilateral cavernosal and supraclinoidal internal carotid artery. Rests of the preoperative investigations were unremarkable. The craniotomy was carried out under general anesthesia with invasive blood pressure and central venous pressure monitoring. During tumor resection, the patient had continuous bleeding, and the hemodynamics kept fluctuating. Intravascular volume was maintained with crystalloid, colloid and packed red cells transfusion. After 3 h of surgery and following loss of almost 2½ L of blood, the surgeons decided to quit. However, it appeared difficult to achieve hemostasis. The bleeding continued from the tumor bed despite repeated attempts to control it. There prevailed a situation of uncertainty. Based on our previous experience, it was decided to administer tranexamic acid at a dose of 10 mg/kg.^[3] Within 5 min of administration of tranexamic acid, there was a significant decrease in the bleeding from the tumor bed and in the next 10 min the surgeons

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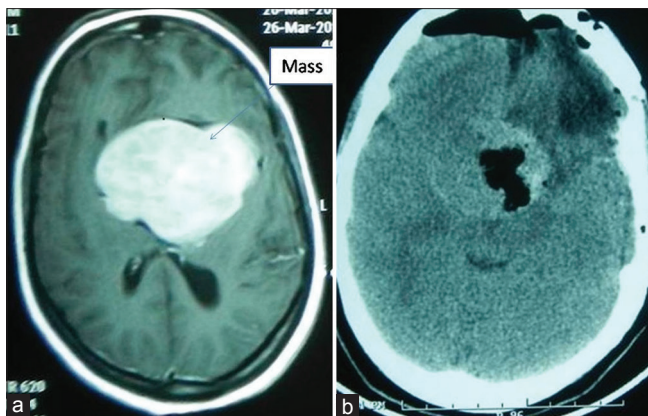


Figure 1: (a) Preoperative magnetic resonance imaging showing a homogenous mass arising in the sellar area. (b) Postoperative computed tomographic scan showing no collection of blood in operated field

reported satisfactory hemostasis. This also coincided with the improvement in hemodynamic profile of the patient and reduction of fluid to the maintenance dose. Postoperatively the patient was shifted for elective ventilatory support and gradual reversal of neuromuscular blockade. The postoperative noncontrast CT scan showed no major collections of blood in the operated field [Figure 1b]. Subsequently the patient was weaned off the ventilatory support and was discharged on the 10th postoperative day.

Discussion

Tranexamic acid has shown to reduce blood transfusion requirement in various surgical procedures however the treatment effect may vary somewhat according to the type of surgery. Its use in neurosurgical patients has been restricted to few trials of TBI and SAH due to fear of cerebral ischemia due to thrombosis and convulsion due to gamma aminobutyric acid antagonism.^[4,5] Although theoretically some increased risk of cerebrovascular thrombosis might be expected, evidence from the Clinical Randomization of an Antifibrinolytic in Significant Hemorrhage-2 trial of tranexamic acid in bleeding trauma patients showed a statistically significant reduction in mortality with no increase in thromboembolic effects. Furthermore, there was a significant reduction in the risk

of myocardial infarction in trauma patients who received tranexamic acid.^[2] Another report suggest no evidence in increased risk of either ischemic clinical manifestation or vasospasm after tranexamic acid use for prevention of secondary bleed in patients with SDH.^[1]

The evidence for use of tranexamic acid to treat massive blood loss during intracranial surgery is weak.^[3] We used this as a desperate attempt to salvage the patient as multiple blood product transfusion, and surgical efforts to stop bleeding for a prolonged period was unrewarding.

The present case report supports the role of tranexamic acid in patients who have significant intraoperative bleeding with difficulty in achieving hemostasis. However, this report is only a single personal experience and event might have occurred by chance. Only a prospective randomized trial can substantiate or refute the benefit of tranexamic acid use for controlling blood loss in this subset of patients.

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Conflicts of interest

There are no conflicts of interest.

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