Complex Meningiomas- Management Issues

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- Meningiomas comprise 15% -19% of all CNS tumours
- 4.7% meningiomas are atypical and 1% are malignant
- Some meningiomas may be associated with NF II and may have a more aggressive course

Treatment of Choice

- Generally, complete surgical excision is the treatment of choice for all meningiomas
- After complete excision in a low grade meningioma no adjuvant treatment is necessary
- Radiation is advisable in malignant meningiomas or atypical meningiomas

- Complete surgical excision may not be possible in some cases due to either critical location or vascularity or involvement of major venous sinuses
- In such cases post op radiosurgery is invariably required
2007 WHO classification of meningiomas

- WHO Grade I
  - Benign meningioma and doesn’t have features of Grade II or III

- WHO Grade II
  - Atypical meningioma
    - Mitotic index >4 per 10 high power fields
    - Brain invasion, Chordoid meningioma/clear cell meningioma
    - Any 3 of following
      - Sheet architecture/small cell
      - Macronucleoli
      - Hypercellularity
      - Spontaneous necrosis

- WHO Grade III
  - Anaplastic (malignant meningioma)
    - Mitotic index >20 per 10 HPF or
    - Frank Anaplasia (sarcoma, carcinoma or melanoma like histology) or
    - Papillary meningioma or
    - Rhabdoid meningioma

It is a common occurrence for a benign meningioma to become atypical after recurrence.

Complex meningiomas

- Complex either due to location/size/vascularity/encasement of blood vessels
  - eg Large skull base, petroclival, Falcotentorial, angioblastic
- Complex due to aggressive nature and repeated recurrences despite multiple treatments
Pre Operative Tumour Embolization

- In highly vascular tumours embolization of feeding vessels of the tumour may help in reducing the vascularity and thus increasing the safety of the surgery.

Meningiomas

Falco-Tentorial Meningioma

Post op (falcotentorial meningioma)
Petroclival Meningioma
23/F, Tumour embolization attempted in a hospital – patient became unconscious after that, attempted surgery – abandoned after making bone flap because of blood loss.
42 M presented with seizures
GBM + Meningioma

8 months after surgery
The aim of the study is to estimate clinical effectiveness of fibrinolytic inhibitor Tranexam in neurosurgical patients with intracranial tumors. The medication was prescribed to 78 patients from 27 to 65 years old. The control group included 57 patients. The following criteria were assessed to estimate the impact of the medication on hemostasis: APPT, PT index, TT, fibrinogen, ATIII activity, factor XII-derived fibrinolysis, spontaneous euglobulin lysis. Blood sampling was drawn at the following stages: after the induction of anesthesia, 30 minutes after Tranexam injection, on the next day after the surgery. Blood from jugular and peripheral veins was analyzed simultaneously. The medication caused significant decrease of fibrinolytic activity. The use of Tranexam was followed by bleeding reduction in the wound. The duration of surgical hemostasis in the main group was 11.7 ± 3.3 minutes which is significantly lower than in the control group (18.1 ± 3.1 minutes) (p = 0.034). Drainage blood loss was lower in the main group (267 ± 23 ml a day) than in the control group (340 ± 28 ml a day). Medication injection during diffuse bleeding from small vessels led to quick and visible bleeding reduction. Thus Tranexam decreases the risk of intraoperative blood loss in the patients with brain tumors.

Abstract

The aim of the study is to estimate clinical effectiveness of fibrinolytic inhibitor Tranexam in neurosurgical patients with intracranial tumors. The medication was prescribed to 78 patients from 27 to 65 years old. The control group included 57 patients. The following criteria were assessed to estimate the impact of the medication on hemostasis: APPT, PT index, TT, fibrinogen, ATIII activity, factor XII-derived fibrinolysis, spontaneous euglobulin lysis. Blood sampling was drawn at the following stages: after the induction of anesthesia, 30 minutes after Tranexam injection, on the next day after the surgery. Blood from jugular and peripheral veins was analyzed simultaneously. The medication caused significant decrease of fibrinolytic activity. The use of Tranexam was followed by bleeding reduction in the wound. The duration of surgical hemostasis in the main group was 11.7 ± 3.3 minutes which is significantly lower than in the control group (18.1 ± 3.1 minutes) (p = 0.034). Drainage blood loss was lower in the main group (267 ± 23 ml a day) than in the control group (340 ± 28 ml a day). Medication injection during diffuse bleeding from small vessels led to quick and visible bleeding reduction. Thus Tranexam decreases the risk of intraoperative blood loss in the patients with brain tumors.
4 years later......

36 F, NF II 2006

2009 May

CVJ neurofibroma

Lumbar Ependymoma
42 M - presented in an unconscious state

Aug 2007

Oct 2007

Post op

GK

2 years after Gamma Knife Surgery
23 M presented with only depression 12 cm long meningioma

35 M with multiple meningiomas
Foramen Magnum meningiomas

- 45 F presented in emergency with near quadriplegia and was on ventilator
- Referred for radiation thinking to be a malignant tumour
Conclusions

- Most of the meningiomas can be successfully excised and don't need any adjuvant therapy while some of them require preop tumour embolization
- Residual tumours would require radiosurgery
- Atypical or anaplastic tumours would require more aggressive multimodality management and occasionally despite whatever one may do the tumours may not respond

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New Delhi, 13-17th April 2016