Intraoperative hyperthermia in a case of sellar - suprasellar SOL surgery

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ABSTRACT

BACKGROUND

Variety of conditions like sepsis, malignant hyperthermia, neuroleptic malignant syndrome, allogenic blood transfusion reaction, drug hypersensitivity, thyroid storm, excessive heat delivery by the radiant heat warmer and hypothalamic injury are the known causes of intraoperative hyperthermia.

OBJECTIVE

We report a rare case of intraoperative hyperthermia in a 40 year old female undergone craniotomy and tumour excision for sellar-suprasellar mass due to intraoperative hypothalamic handling during the surgery.

CONCLUSION

- We would like to emphasise that intraoperative hypothalamic handling can lead to hyperthermia during surgical manipulation in the vicinity of sellar-suprasellar region.
- We highlight the indispensable role of an anaesthesiologist in prevention, anticipation and management of hyperthermia.
- The surgeons must be informed on time so that they can timely participate in management of such a condition by careful dissection of the tumour in the vicinity of hypothalamic region.

INTRODUCTION

- Hyperthermia - elevated body temperature more than 37.5 °C
- Failed thermoregulation - body produces or absorbs more heat than it dissipates.
- Neurons in preoptic anterior hypothalamus and the posterior hypothalamus receive two kinds of signals:
  1. Peripheral nerves that reflect warmth/cold receptors
  2. Temperature of the blood bathing region.

HISTORY AND EXAMINATION

40 year old female patient
- Headache since 3-4 years and diminution of vision since 6 months
- No history of fever, cough, vomiting, seizures, altered sensorium, drug allergy, weight loss, heat or cold intolerance.
- Average built with BMI of 25.
- Conscious and oriented to time, place and person with GCS of 15/15
- Pulse was 80/min regular, B.P. 130/80 mm of Hg. No CVs, CNS or respiratory abnormality.
- Bilateral visual field defect (Bitemporal Hemianopia) with vision of 6/12 in both eyes.

INVESTIGATIONS

- Hb - 11 gm %, T.L.C - 8000/cu mm
- Platelet count - 3 lac/cu mm
- Blood urea - 20 mg % and Creatinine – 0.8 mg %
- INR: 1.3, Na/K - 130/4.2 Mec/l
- ECG and Chest X-Ray, Thyroid profile, GH assay, Prolactin, LH, FSH and ACTH were within normal limits.

MATERIALS

- Large sellar suprasellar lesion with right cavernous sinus invasion
- Enlargement of right ICA with displacement of right temporal lobe laterally
- Splaying of optic chiasma.

MRI BRAIN

ANAESTHESIA PROTOCOL

- Monitoring : ECG, SPO2, NIBP, IBP, CVP, ETCO2, Nasopharyngeal temperature, ABG.
- Induction : Propofol + Fentanyl + Rocuronium.
- Maintenance : Sevoflurane/nitrous-oxide/Fentanyl + Vec
- Baer Hugger with warming blanket used.
- Frozen section revealed Hemangiopericytoma of hypothalamic-pituitary region.
- Surgical manipulation of the tumour led to rise in temperature up to 38.5 °C within a span of half an hour which was unusual.

MANAGEMENT

Baer Hugger’s temp reduced to 24 deg C. IV paracetamol 1 gm + Hydrocortisone 100 mg was given. Ice cold saline started through CVP catheter. Temperature continued to rise until the tumour was completely resected.

DISCUSSION

- Rise in temp not associated with any hemodynamic changes rules out hyperthermia due to allogenic BT.
- No I/O antipsychotics, antidepressants, no features of sepsis like tachycardia, raised TLC and no findings suggestive of thyroid storm.
- No features suggestive of malignant hyperthermia like rise in ETCO2, DIC, hyperkalemia, muscle rigidity, metabolic acidosis.
- Hypothalamic injury is a well known cause for hyperthermia (Central/Neurogenic fever) However, we wish to highlight that not only injury but even hypothalamic handling during tumour dissection may lead to dangerous hyperthermia which can be detrimental especially to the brain.

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