



Dexmedetomidine use in Microlaryngotracheobronchoscopy (MLTB): An audit of MLTB anaesthetic practices at Alder Hey Children's Hospital (AHCH)

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INTRODUCTION AND AIMS

Both total intravenous anaesthesia (TIVA) and inhalational anaesthesia have been described for maintenance during microlaryngotracheobronchoscopy (MLTB). Dexmedetomidine provides an anaesthetic-sparing effect without causing clinically significant respiratory depression (1).

We report our experience of introducing dexmedetomidine alongside propofol TIVA for MLTB and compare this against both propofol/remifentanyl TIVA and a traditional volatile technique using sevoflurane for maintenance.

The aims of this audit are to demonstrate:

- TIVA for MLTB is cost-effective and environmentally sound, whilst producing an optimal post-operative recovery profile.
- Dexmedetomidine is a viable alternative to remifentanyl with propofol for MLTB TIVA.

METHODS

Between May and December 2020, we evaluated the peri-operative records of patients undergoing MLTB at AHCH. Anaesthetic charts and machines were interrogated to quantify anaesthetic agent use and recovery documentation was reviewed to investigate the post-operative length of stay and the WATCHA score (fig 1), a tool utilised in screening for paediatric emergence delirium (2). A visual analogue scale (VAS) to assess operator satisfaction was recorded. Drug cost was determined by BNF prices.

RESULTS

99 MLTBs (36 diagnostic and 67 therapeutic) were identified. 7 MLTBs using propofol/dexmedetomidine (PD) TIVA, 22 using propofol/remifentanyl (PR) TIVA and 70 using sevoflurane maintenance. Sevoflurane was used for induction in the majority of cases. On average 15mls of sevoflurane use was recorded in TIVA cases compared with a total of 87mls in the sevoflurane only group. The mean cost for anaesthetic agent use in each group was PR £13.40, PD £24.44 and sevoflurane £40.84. Operator satisfaction VAS was 8/10 in all groups. The mean WATCHA score was PD 1 (N=3), PR 1.5 (N=6) and sevoflurane 1.25 (N=12). Mean recovery duration in each group was PD 32 minutes, PR 28 minutes and sevoflurane 29 minutes.

DISCUSSION

Maintenance with TIVA (propofol with either remifentanyl or dexmedetomidine) was cheaper than sevoflurane for MLTBs with equivalent operating conditions.

Sevoflurane has a considerable global warming potential, producing 49kg CO₂ equivalents per 250ml (3). TIVA reduced the mean case sevoflurane usage by 72mls (14kg of CO₂ equivalent) per case, a substantial environmental benefit.

Although WATCHA scores were only recorded in a small number of cases, the results indicate that dexmedetomidine improves the recovery profile with minimal difference in post-operative recovery duration.

Fig 1: WATCHA score (2)
(score is observed values)

Behaviour	Score
Asleep	0
Calm	1
Crying, but can be consoled	2
Crying, but cannot be consoled	3
Agitated and thrashing around	4

REFERENCES

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