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Improving knowledge, recognition & management of local anaesthetic toxicity amongst orthopaedic surgeons & anaesthetic doctors

Background

- Local anaesthetic (LA) agents are widely used as either an anaesthetic or analgesic agent or both.
- They are being increasingly used by both anaesthetists and orthopaedic surgeons in a variety of orthopaedic procedures.
- In administering any drug, it is imperative that the practitioner understands its indications, dose range and consequences of toxicity.
- The toxic side effects of LA agents can be potentially devastating and can lead to death if not recognised and treated promptly.

Objectives

- To explore the knowledge and understanding of LA use and management of toxicity amongst orthopaedic and anaesthetic doctors
- To improve both recognition and understanding of LA toxicity management with teaching presentations and development of a LA toxicity pocket guide

Methods

- An initial survey was conducted amongst trainees and consultants in both anaesthesia and orthopaedic surgery.
- Questions were asked about local anaesthetic drug concentrations, dosage calculations, the recognition of local anaesthetic toxicity and its management.
- After collecting the results, teaching sessions were delivered to the department of anaesthesia and to trainee orthopaedic surgeons.
- A pocket guide, written by ourselves, was developed as a portable reminder regarding dosage and toxicity management (see figure 1).
- A repeat survey was then conducted to assess understanding and recall of the teaching delivered.

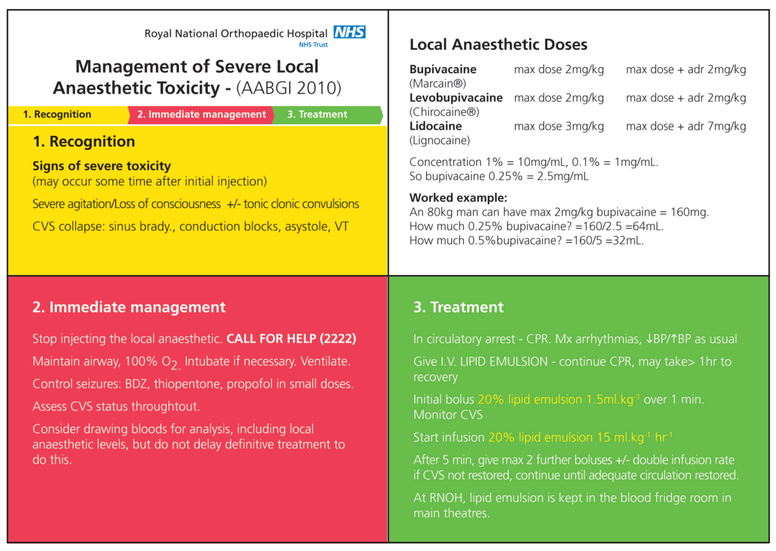


Figure 1 A pocket guide to the recognition and management of severe local anaesthetic toxicity including example dosages.

Results

- We surveyed comparable numbers of orthopaedic and anaesthetic doctors both pre (n=40) and post teaching (n=38) intervention.
- Survey respondents comprised a mix of anaesthetic registrars and consultants and orthopaedic core trainees, registrars and consultants.

Figure 2 Doctors were asked to identify the maximum dosages for commonly used LA agents. 100% of anaesthetists correctly identified the maximum dosage of bupivicaine without adrenaline pre and post teaching. There was a marked improvement in correct answers given by orthopaedic surgeons post teaching intervention.

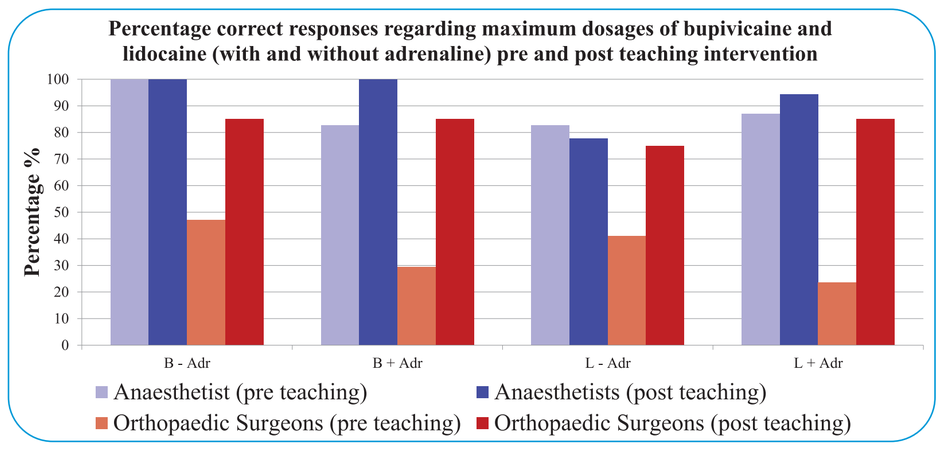
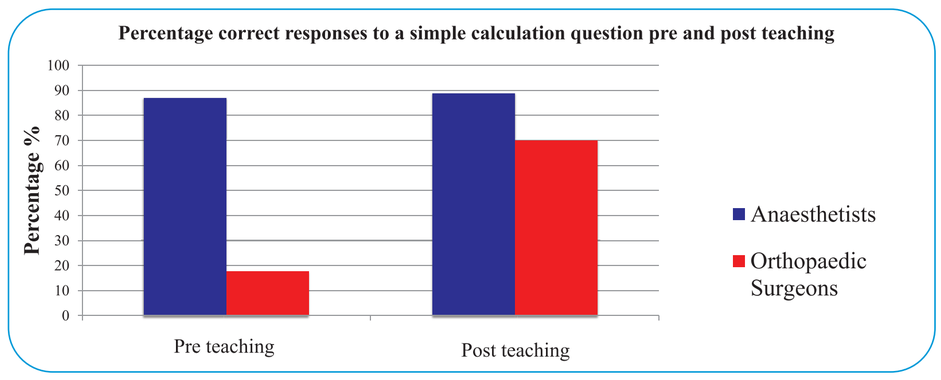


Figure 3 Respondents were also asked to perform a simple calculation regarding the maximum dose and maximum number of millilitres (mls) of bupivicaine without adrenaline for an 80kg male (pre teaching) and 55kg female (post teaching). 70% Orthopaedic surgeons were able to answer this correctly after our teaching, compared with 17.6% prior to the teaching intervention



- 100% of respondents post teaching intervention could name three symptoms of LA toxicity, compared with 90% of respondents prior to the intervention.
- Prior to the teaching, 5% of orthopaedic surgeons identified ntralipid® or lipid emulsion as the main rescue drug to LA toxicity. Post teaching, 70% of orthopaedic surgeons correctly identified the drug.
- Our post teaching survey asked the location of the intralipid®/lipid emulsion. Over 75% of respondents were able answer correctly.

Discussion

- The results initially indicated that baseline knowledge and understanding about LA toxicity was lacking, not only among the majority of orthopaedic responders, but among some of the anaesthetists.
- Following a dedicated teaching session delivered by ourselves to both groups of doctors, comprehension has markedly improved.
- This is particularly noticeable amongst the orthopaedic surgical group.
- The pocket guides were enthusiastically received and respondents commented on it's convenience and simplicity.
- We propose that our trust and others adopt the LA pocket guide, and initiate teaching on this topic to allow continual learning and safe practice.

Conclusions

Knowledge of local anaesthetic toxicity should be continually refreshed and updated amongst both trainees and consultants. Perhaps a teaching session delivered at induction would go some way to improve this.

Acknowledgements
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References
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[2] J. McKevith et al. Anaesthesia 65 (5): 535–536. 2010. [3] Cheichanowicz et al. Anesthesiol Res Pract. 2012; 131784