

A PRE AND POST SURVEY OF A WEB AND SIMULATION-BASED COURSE OF ULTRASOUND GUIDED NERVE BLOCKS FOR PEDIATRIC EMERGENCY MEDICINE

Adam Bretholz*¹, Gillian Lauder², Quynh Doan¹, Adam Cheng¹

¹Department of Pediatrics, University of British Columbia

²Department of Pediatric Anesthesia, University of British Columbia

Introduction

Fracture pain in the pediatric emergency department (PED) is generally treated with systemic analgesia using opioids, which may obscure other potential injuries in multisystem trauma. Fracture pain can alternatively be controlled with nerve blocks. To guide nerve blockade, direct visualization with ultrasound (U/S) may be superior to classic blind techniques that use anatomical landmarks.¹ U/S guidance can facilitate safer blockade of the ulnar and femoral nerves that supply sensory innervations to regions associated with boxer and femur fractures (2,3). Currently, there is little training available to pediatric emergency medicine (PEM) physicians on these procedures. Our web and simulation-based U/S course is designed to fill this void. This study assessed our course's potential to improve physician comfort level with and intended future use of U/S guided nerve blocks. We hypothesized that this course would increase these outcome measures.

Methods

We conducted a pre and post-survey study targeting PEM physicians and fellows. Eleven subjects completed a web-based tutorial and one-day simulation program. The web-based tutorial comprised two sections: a description of U/S physics and appropriate choice and use of probes, followed by an outline of nerve block complications and their acute management. Experts in the field instructed the one-day simulation program using U/S models focusing on the femoral and ulnar nerve. Study participants completed survey questionnaires to document their comfort level and potential use of U/S guided nerve blocks before, immediately after and one month after the course. We used the Wilcoxon signed ranked test and descriptive statistics to gauge (i) changes in comfort level, (ii) intention to use the technique and (iii) course satisfaction and follow-up training plans.

Results

All participants had an increased comfort level with U/S immediately and one month after the course. Moreover, their comfort with and intention to use both nerve blocks increased immediately post-course. This result was statistically significant for the ulnar nerve block ($p = 0.014$). Neither increase was sustained one-month post-course. In addition, the course addressed participant learning needs (10/11, 91%). Most participants would also take advanced training (10/11, 91%) and refresher courses (9/11, 82%), particularly if offered once a year (7/11, 64%).

Discussion/Conclusion

Although participants felt that their learning needs were met, and that they would need only annual refresher courses, this was inconsistent with their comfort and intention to use U/S guided nerve blocks even one-month post-course. It should be noted that during the study period an U/S machine was not available in our PED, which may have influenced our findings. Our study suggests the need for refresher courses to maintain comfort and intention to use U/S nerve block skills, advanced courses to develop these skills and protocol development in this area.

References

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