

[NM-188] The Impact of Ultrasound-Guided Brachial Plexus Blockade Following Arteriovenous Fistula Creation in Pediatric Patients

Furstein J, Mavi J, Sadhasivam S

Cincinnati Children's Hospital Medical Center , Cincinnati , Ohio, USA

Introduction: The treatment goal for patients awaiting a kidney transplant is to optimize care and minimize morbidity, making the choice of long-term vascular access for hemodialysis of utmost importance.[1] Despite the superior longevity, lower incidence of thrombosis and decreased rate of infection, arteriovenous fistulas (AVF) remain less frequently utilized than central venous catheters (CVC) for hemodialysis in the pediatric population. The reasons most cited for AVF avoidance include: marginal anatomy, limited surgical expertise, and the length of time required for fistula maturation.[2] Brachial plexus blockade (BPB) has the potential to improve both short and long-term outcomes following AVF creation, as the resultant increase in venous diameter improves surgeon ability to identify the optimal graft site. In addition, the subsequent increase in blood flow through the AVF is beneficial to graft maturation.[3] The safety and efficacy of performing BPB under general anesthesia has recently been reported as being not only safe, but perhaps more effective than when performed in an awake patient, leading to an increase in the number of pediatric patients receiving BPB while under general anesthesia.[4] We report our experience utilizing BPB for AVF creation or revision in the pediatric population requiring hemodialysis in an effort to further discern whether the utilization of BPB during AVF creation or revision has led to any significant improvements in outcomes in pediatric patients with end-stage renal disease requiring vascular access for hemodialysis.

Methods: After obtaining IRB approval, the medical records of all patients who underwent AVF creation or revision at CCHMC since 2008 were reviewed. A total of 28 medical records were reviewed, with BPB utilized during AVF creation or revision in a total of 14 cases. An equal number of cases not receiving BPB were chosen at random for comparison.

Results: While no significant differences existed between the groups, there was a moderate positive correlation between receiving BPB and graft maturation, $r=0.321$, $n=28$, $p=0.096$. Double the number of patients achieved graft maturation when BPB was utilized during the intraoperative phase when compared to those who did not receive BPB.

Conclusion: While this is a limited sample, the results are encouraging as over half of the patients who received BPB experienced graft maturation. Our results reinforce the contention that BPB is not only useful and safe, but may have a positive impact on AVF creation. Should BPB be employed, postoperative AVF failure rates may be reduced. As this is an ongoing study, we will report further outcomes from a larger sample at the annual meeting.

References:

1. Mak, Warady. Dialysis:vascular access in children-arteriovenous fistula or CVC? *Nat Rev Nephrol.* 2013;9(1):9-11.
 2. Chand, Valentini. International pediatric fistula first initiative: a call to action. *Am J Kidney Dis.* 2008;51:1016-1024.
 3. Macfarlane et al. Does regional compared to local anaesthesia influence outcome after arteriovenous fistula creation? *Trials.* 2013;14(1):263.
 4. Misamore et al. A prospective analysis of interscalene brachial plexus blocks performed under general anesthesia. *J Shoulder Elbow Surg.* 2011, 20(2):308-14.
-