The Utility of Pre Procedure Ultrasound in Obstetrics Analgesia

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Introduction: Recently, there has been increased interest in the use of ultrasonography (US) for neuraxial analgesia and anesthesia. Grau et al. as well as other authors have shown that pre-procedural US can reduce the number (#) of attempts at placing epidural catheters (EPID) in difficult patients (pts) as well as improving the learning curve of EPID in the obstetric (OB) pt population.1-3 We sought to determine the benefit, if any, of pre procedure US in our OB pt population and wish to report our preliminary Results. Specifically we hypothesized that among pts with poor landmarks (barely palpable or non-palpable), US would reduce the (#) of needle sitings (separate needle punctures required for successful EPID) and/or attempts (# needle passes required at each siting for EPID) compared to pts who did not have US. Among pts with good landmarks (prominent or palpable) there would be no differences between groups.

Methods: This is an ongoing, non-blinded, prospective randomized trial. All enrolled pts were randomly assigned to either the Ultrasound Group (USgrp) or No Ultrasound Group (NOgrp) by drawing a card in a sealed opaque envelope. Pts in the USgrp had pre-procedure US exam of the lumbar spine performed by a single investigator (STF). EPIDs were performed by all members of the OB Anesthesia Team, including attendings, anesthesiology residents under direct supervision of an attending, and CRNAs. The following data were collected: Quality of pt's spinal landmarks (prominent, palpable, barely palpable, non-palpable), # of needle sitings, # of attempts, time for performance of US in the USgrp (TUS), time for performance of EPID (TEPID), total time TT (TT=TUS+TEPID in USgrp or TT=TEPID in NOgrp), failure rates and pt satisfaction with EPID (1 to 5 Likert scale). Wilcoxon two-sample test was used for comparing two groups. P<0.05 was considered significant.

Results: 32 pts have been enrolled thus far. Among pts with poor landmarks there was a significant difference between groups in the # of needle sitings: median (range) 1(1.0 – 1.0) vs 3(2.0 - 4.0) USgrp vs NOgrp p=0.0006. There were also significant differences in # attempts (USgrp < NOgrp) p=0.0017 and TEPID (USgrp < NOgrp)p=0.016. There were no significant differences in # sitings or attempts between groups among pts with good landmarks. No significant differences between groups were found for TT or pt satisfaction among pts with poor landmarks. Among pts with good landmarks TT was greater in the USgrp than NOgrp p=0.011. There was one failure in the NOgrp.

Discussion: Our Results thus far suggest that US reduces the # of required needle sitings and attempts for EPID in pts with poor landmarks. It does not seem to be of significant benefit in pts with good landmarks. Continued study is required.