

A69 (Poster 28)

An Accurate Blood Pressure Device Performs Poorly In Pre-Eclampsia

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Background: Accurate blood pressure measurement is essential on the Labour Ward, particularly when regional blocks are used and in cases of pre-eclampsia (PET). Commonly used automated devices such as the Dinamap are known to be inaccurate in the normal adult population, and particularly in PET. The current move to eliminate mercury from all clinical areas has put added pressure on clinicians to find a viable, accurate alternative. We have previously determined that the Welch Allyn 'LifeSign' blood pressure device is accurate in adults according to the British Hypertension Society (BHS) Protocol.

Method: We proceeded to validate this device in the pregnant population, including PET.

Results:

	Adults (n=85)		Preg. (n=17)		PET (n=7)	
	SBP	DBP	SBP	DBP	SBP	DBP
Grade	A	A	B	A	D	B
Mean \pm SD of diffs (mm Hg)	-1 \pm 5	-3 \pm 4	-2 \pm 7	-3 \pm 6	-8 \pm 6	-6 \pm 5

BHS grade A/B pass; C/D fail.

A subset of intra-arterial measurements (n=20) confirmed this inaccuracy in PET.

Discussion: This is the first automatic blood pressure device suitable for use on a labour ward that is accurate. However this device significantly under-reads blood pressure in PET.

A71 (Poster 30)

Hypotension And Postural Haemodynamic Changes Following Caesarean Section. Effects of Glycopyrrolate 0.4 mg iv With Spinal Anaesthesia

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Introduction: Unopposed vagal activity during spinal anaesthesia for caesarean section may play a role in the onset of hypotension, and has been suggested as a possible cause of sudden postoperative cardiovascular collapse. This study examines the possible role of glycopyrrolate administered iv at the time of spinal injection.

Method: With approval and consent, glycopyrrolate 0.4 mg iv or an equal volume of saline was administered immediately before spinal injection to 70 women undergoing elective repeat caesarean section, as a double blind randomised controlled study. All patients were prehydrated using 20 mL/kg crystalloid iv. Blood pressure and heart rate were recorded automatically at one-minute intervals. Hypotension (systolic BP < 100 mm Hg and < 80% of baseline) was treated immediately with ephedrine 5 mg in increments until corrected. Following surgery, patients were sat bolt upright for 1 minute and blood pressure and heart rate compared to recordings in the supine position before and after the posture change. Sensory block level was recorded.

Results: There was no difference in the incidence or severity of hypotension between the two groups. Heart rate was significantly higher in patients receiving glycopyrrolate. This difference persisted following surgery. Both groups responded similarly to change in posture. There was a small decrease in mean systolic pressure, accompanied by a small increase in both diastolic pressure (ns) and heart rate in both groups. No patient developed significant hypotension or bradycardia while sitting, despite persistent high sensory levels.

	saline (n 36)	glycopyrrolate (n 34)
Hypotension % (95% CI)	53 (35.6 – 69.6)	50 (32.4 – 67.6)
Postop sensory level, median (range)	T4 (T2 – T6)	T4 (T2 – T6)
Systolic BP, mean (sd)	114 (12.2)	110 (12.4)
	Sitting	107 (12.4)
Diastolic BP, mean (sd)	62 (8.2)	61 (7.9)
	Sitting	62 (10.2)
Heart Rate, mean (sd)	81 (11.9)	96 (14.7)*
	Sitting	105 (15.0)*

* p < 0.05 between groups

Discussion: The cardiovascular response to sitting was mild considering the height of sensory block. Episodes of cardiovascular collapse seen following spinal caesarean sections may not be related to posture change. Increased cardiac preload following uterine contraction may prevent hypotension and bradycardia associated with vagal reflexes. Alternatively, increased afterload due to kinking of the femoral arteries on sitting may have obscured any effects. Glycopyrrolate 0.4 mg iv had no effect either on postspinal hypotension nor postural haemodynamic change.

Reference: Br J Anaesth, 77:274-276; 1996

A70 (Poster 29)

Conus Damage By "Atraumatic" Spinal Needles
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Medical students and interns are usually taught that when conducting dural puncture the needle should be inserted no higher than the 4th lumbar interspace, to avoid damage to the spinal cord. The tip of the conus usually lies between L1 and L2, but in 10% may extend below this level,¹ moreover one study demonstrated that 59% of dural punctures were performed one or two spaces higher than assumed.² Meanwhile anaesthesiologists have become accustomed to *epidural* insertion at almost any spinal level, while L2/3 is considered permissible for spinal insertion.³

Among recent malpractice cases in which expert reports were provided by the author, there have been 5 in which MRI revealed a syrinx in the conus. All women received either spinal (n=2) or combined spinal-epidural (n=3) anesthesia in 1995-97, using a 25-27 gauge Whitacre needle. Their weights ranged from 46-100 kg and their ages 15-55 years. All experienced pain in one leg (n=4) or the back, during insertion, which was believed to be at L2/3 (n=4) or L1/2. In all cases there was free flow of CSF and successful spinal anesthesia following injection of 2-2.6 ml of bupivacaine. Post-spinal recovery was delayed in one leg, while sensory loss in L4/5 S1 distribution and foot drop persisted in all patients, with urinary symptoms in 3. In all cases MRI showed a normal length cord and a syrinx in the conus on the same side as both the clinical deficit and the symptoms on spinal insertion.

Atraumatic spinal needles have at least one mm of blind tip beyond the hole. The consistent histories in these 5 cases strongly suggest that conus damage was caused by the needle tip. Anaesthesiologists need to relearn the rule that a spinal needle should not be inserted above L3 at the highest. We should perhaps regard Tuffier's line as an insuperable barrier.

References

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A72 (Poster 31)

Inadvertent Dural Puncture and the Efficacy of Prophylactic Blood Patches at a University Hospital

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Introduction: The incidence of inadvertent dural puncture ("wet tap") during epidural catheter insertion is 1-2% at teaching institutions and the incidence of post dural puncture headache (PDPH) in these patients is as high as 75 - 90%.^{1,2} The use of prophylactic epidural blood patches (PEBP) is becoming increasingly popular.³ The purpose of this IRB approved study was to determine the incidence of inadvertent dural puncture and the rate of usage and efficacy of prophylactic epidural blood patch.

Methods: The Obstetric Anesthesia complication log from 3 years was examined and note was made of inadvertent dural punctures, use of PEBP, presence of PDPH, use of therapeutic blood patch (TxEBP), and postural headache in the absence of recognized wet tap. Data were analyzed using Chi-square and Fischer's exact tests, with P < 0.05 considered significant.

Results: The incidence of inadvertent dural puncture was 0.56%. 28% of patients received PEBP. 39% of patients who received PEBP had PDPH, compared to 76% of those who did not (P<0.01). There was no significant difference in the percentage of patients who received TxEBP. Incidence of postural headache in the absence of recognized wet tap was 0.14% and 40% of those patients received TxEBP.

Conclusions: In this retrospective review, patients who received a PEBP were less likely to suffer from PDPH, although they received TxEBP at the same rate as those who did not receive PEBP. A prospective double-blinded study is ongoing.

	PDPH [n (%)]	Tx EBP [n (%)]
Prophylactic Patch (n=18)	7 (39)	4 (22)
No Prophylactic Patch (n=46)	35 (76)*	19 (41)

*P=0.01

- References:** 1) IJOA 1999;8:105-9. 2) Can Med Assoc J 1993;149:1087-93. 3) Can J Anaesth 1998;45:110-14.