CORRESPONDENCE

Real-time ultrasound-guided epidural catheter insertion in obese parturients

Alexandre Gnaho, MD · Antoine Nau, MD ·
Marc Edouard Gentil, MD, PhD

Received: 15 December 2014 / Revised: 6 June 2015 / Accepted: 15 July 2015 / Published online: 1 August 2015
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To the Editor,

Emerging literature suggests the usefulness of pre-procedural ultrasound (US) assessment of the lumbar spine¹ to facilitate epidural catheter insertion. There are also reports of single-operator real-time US-guided epidural catheter insertion in patients with normal anatomy.^{2,3} Epidural catheter insertion in morbidly obese parturients can be technically challenging.⁴ We describe the advantage of real-time US-guided epidural insertion in this patient population after failure of a pre-procedural US of the lumbar spine followed by an attempted standard loss-of-resistance epidural technique.

Following Institutional Ethics Committee approval (CERCAR-HIAB-FARU-2009-005) and patient consent, morbidly obese (body mass index $> 40 \text{ kg}\cdot\text{m}^{-2}$) parturients with failed epidural catheter insertion (more than three attempts by an experienced operator despite pre-procedural US assessment of the lumbar spine) participated in this study from May 31, 2010 to August 1, 2013. With the parturient in the sitting position, one operator applied a SonoSite EdgeTM 2-5 MHz curved array probe (Bothell, WA, USA) over the mid-lumbar spine to obtain a scan of the paramedian oblique sagittal plane.¹ During real-time US guidance, a second operator carefully advanced a 17G Tuohy needle (Vygon, France) into the interlaminar space

until the needle tip reached the posterior part of the ligamentum flavum-dura mater complex. In cases where the tip was not visible, a slight jiggling of the needle to move the tissues helped localize its position. With the probe held firmly against the patient's back, the needle-syringe (5 mL saline) assembly was carefully advanced in a standard manner using the loss of resistance technique. Epidural anesthesia was obtained with sufentanil 10 μg and 0.1%, ropivacaine 15 mL (patient's height $< 165 \text{ cm}$) or 20 mL. After 30 min, the level of sensory block (cold perception), motor block (Bromage scale), and patient satisfaction score (1 = best to 6 = worst) were assessed.

Real-time US-guided epidural catheters were successfully inserted in all patients who took part in this project (Table). The epidural space was identified using one to three attempts. The tip of Tuohy needle was not visible in four cases, and we were able to identify the catheter in only 1/10 parturients. No inadvertent dural puncture occurred, and recovery from epidural analgesia was uneventful in all parturients.

We report real-time US-guided epidural catheter insertion in morbidly obese patients. This technique may be useful in cases where patient anatomy presents difficult epidural catheter insertion. Further studies are warranted to assess safety and efficacy of such a strategy.

A. Gnaho, MD (✉) · A. Nau, MD · M. E. Gentil, MD, PhD
Department of Anesthesia and Intensive Care, Hôpital
d'Instruction des Armées Begin, Saint Mandé, France
e-mail: agnaho@hotmail.fr

Table 1 Parturient demographics and study data

Patient #	Age (yr)	Sensory level (left/right)	Bromage score (left/right)	BMI (kg·m ⁻²)	Number of attempts	Satisfaction score 1 = best to 6 = worst	Modification of ES at LOR
1	32	T10/T10	2/2	40.4	2	2	Anterior displacement of posterior dura and widening of ES
2	27	T8/T10	3/2	41.2	2	3	None
3	30	T10/T12	2/2	41.0	2	2	Anterior displacement of posterior dura and widening of ES
4	28	T10/T10	2/2	41.5	2	1	None
5	39	T10/T10	2/2	41.1	3	1	Anterior displacement of posterior dura and widening of ES
6	30	T12/T10	2/3	42.8	3	2	None
7	33	T10/T10	2/2	42.0	2	3	Anterior displacement of posterior dura and widening of ES
8	31	T10/T12	3/2	40.6	2	1	Anterior displacement of posterior dura and widening of ES
9	30	T12/T10	2/2	40.5	2	2	Anterior displacement of posterior dura and widening of ES
10	29	T10/T10	2/2	41.8	2	2	None

BMI = body mass index; ES = epidural space; LOR = loss of resistance

Conflicts of interest None declared.

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