practical advantages and encourages use of this block in pelvic cancer pain management when medications prove inadequate. The overall effectiveness of this approach awaits confirmation by randomized controlled clinical trials.

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Controlling Needle Tip Progression During Ultrasound-Guided Regional Anesthesia Using the Hydrolocalization Technique

To the Editor:

Ultrasound-guided regional anesthesia (UGRA) is becoming an increasingly popular technique among regional anesthesiologists, because it offers many advantages over neurostimulation. However, echogenicity of most types of needles is of poor quality in the 30° to 60° range of angle required for clinical UGRA. Anesthesiologists have proposed different techniques to either locate the needle tip proximity to neural structure, or to identify exact position during block placement. Some anesthetists propose combining neurostimulation with ultrasound, but this technique is not universally accepted because it makes regional anesthesia more complex, and may not improve efficiency or safety. On the other hand, 2 approaches have been described to locate the needle tip during UGRA, depending on whether the needle progresses in or out of the plane of the ultrasound beam: the in plane (IP), and the out of plane (OOP) approaches, respectively. The IP approach is considered to be the safer approach because it continuously monitors needle tip progression. However, recent studies demonstrated that the IP approach induced a false sense of security because continuous visualization of the needle tip is complex and not always traced by ultrasound. Moreover, the IP approach requires important modifications of the standard practice of regional anesthesia for a neurostimulation-skilled physician, including different sites of puncture, needle direction, and sensations, during needle progression. Conversely, the OOP approach allows neurostimulation-skilled physicians performing UGRA to maintain their clinical approaches.

During the last 2 years, we have used UGRA to place upper limb blocks in patients using either the IP or OOP approach. However, because of the convenience and simplicity of the OOP approach, we developed the hydrolocalization technique (Hloc), in order to increase the accuracy of needle tip position detection. Hloc consists of repetitive injections of a small volume of fluid performed before any progression of the needle tip toward the targeted nervous structures (Fig 1). We initially modeled this concept for OOP-UGRA and validated it for training purposes. By using Hloc in a tissue-equivalent experimental model, we observed that we were able to systematically identify the needle tip and trace its progression. We observed that 0.5 mL of fluid injected through the needle was identified by the OOP approach, and repetition of these injections during step-by-step needle progression perfectly traced the needle tip course toward the selected nerves. Interestingly, we noted on our experimental tissue-equivalent model that Hloc applied using the OOP approach also facilitated optimizing and adjusting the spread of local anesthetic solution to a targeted distribution volume.

Eight senior anesthesiologists familiar with the Hloc experimental concept prospectively assessed Hloc applied to OOP-UGRA in a large cohort of 351 consecutive axillary block (AB) patients. (Garnier T, Boc S, Mercadal L, Ecoffey C, Dhonneur G. Hydrolocalization during ultrasound-guided regional anesthesia. Anesthesiology 2007;107: A639.) Each anesthesiologist participating in the clinical evaluation performed at least 40 ABs. Hloc allowed AB placement in all patients using OOP-UGRA. No patient required general anesthesia. The median (range) duration of AB placement was 300 seconds (120-1200 seconds). The overall success rate of AB, defined by the presence of a complete sensory block of the major cutaneous nerve distributions (ulnar, radial, median, musculocutaneous, medial cutaneous of arm, medial cutaneous of forearm) was 97.2%. Ten patients (3.4%) required 12 supplemental blocks. Only transient minor complications occurred during AB placement: paresthesia (4.9%), and venous vascular punctures (3.9%). No late complication was reported at the follow-up visits.

Hloc required a mean (SD) of 4.4 (2.2) mL of fluid to trace needle tip progression, and the total volume of local anesthetic solution, made of an equal volume of 1.5% mepivacaine or 2% lidocaine and 0.75% ropivacaine or 0.5% ropivacaine, was 33.5 (5.6) mL. Based upon AB characteristics including duration of placement, the 8 anesthesiologists involved in this evaluation considered that 10 to 15 blocks were required to successfully perform...
Fig 1. Hydrolocalization technique during ultrasound-guided axillary block placement using the out-of-plane approach. (A) The needle is inserted subcutaneously. (B) Before any movement of the needle, a small volume (0.5 mL-1 mL) of local anesthetic is injected, in order to determine the exact position of the needle tip. (C) The needle is advanced step-by-step toward the targeted nerve. (D) A titrated volume of local anesthetic solution is injected in order to obtain a homogenous diffusion around the targeted nerve. Local anesthetic solution spread outlined by dotted line in (B), (C), and (D). AA, axillary artery; N, nerve; Nrv, nerve; V, vein.

AB within 5 minutes using the Hloc applied to OOP-UGRA. Very recently, we evaluated the learning process of Hloc in nonexperts. Twelve residents in anesthesia, novices to UGRA, were involved in this experimental model simulation study. We observed that residents showed a very short learning process of Hloc using OOP-UGRA. (Dessieux T, Bloc S, Estèbe JP, Mercadal L, Ecoffey C. Training program for ultrasound-guided regional anesthesia. Anesthesiology 2007;107:A358.) According to our initial experimental and clinical experiences, we believe that Hloc is an efficient, reproducible, and easy-to-learn technique to place AB using the OOP approach. Further studies are needed to confirm our preliminary results and demonstrate the safety of Hloc applied to OOP-UGRA.

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“Oblique” Needle-Probe Alignment to Facilitate Ultrasound-Guided Femoral Catheter Placement

To the Editor:
Both the out-of-plane (OOP) and in-plane needle-transducer alignment techniques have limitations when applied to ultrasound guided perineural femoral catheterization. The main drawback of the in-plane approach is that the needle can deviate from the ultrasound beam, and thus be lost from view. This can place the nerve at risk of needle impalement. In-plane advancement of a needle across the axial plane of the lateral part of the upper thigh can also place poorly visible neural structures (such as the lateral femoral cutaneous nerve) at risk of needle trauma. For these and other reasons, many operators prefer the OOP approach. First, many anesthesiologists are already familiar with this approach for venous cannulation. Second, it is the more direct route to the