Control/Tracking Number: 24-CS-2239-WCA
Activity: Case Study
Current Date/Time: 10/15/2023 2:52:48 AM

How deep is your nerve block needle going? A Case Report of an Ultrasound-assisted Lumbar Plexus Block in Morbidly Obese Patient performed with Alternative Anatomical Landmarks

References:
1) Analgesia for total hip and knee arthroplasty: a review of lumbar plexus, femoral and sciatic nerve blocks. Hogan MV, Grant RE, Lee L Jr. Am J Orthop (Belle Mead NJ). 2009 Aug;38(8):E129-33. PMID: 19809608 Review.
2) A Lumbar Paravertebral Space Ultrasound Plexus Block Technique for Hip Fracture Surgery in Elderly. Saranteas T et al. J Long Term Eff Med Implants. 2022;32(3): 65-71. PMID: 35993990.
3) A new rule for femoral nerve blocks, Schultz-Stübner S et al. Reg Anesth Pain Med. 2005 PMID: 16135352 Clinical Trial.
4) What is cun? Roboubi B. Reg Anesth Pain Med. 2006. PMID: 16418038.

Author Block: Emanuele Pisello[1], Luca Brugiaferri[2], Luca Angelelli[3], Matteo Ciuffreda[3], Sergio Sorrenti[2], Jessica Silvestri[2], Cristiano Piangatelli[3], Dario Galante[4].

[1]Anaesthesia, Resuscitation, Intensive Care and Pain Management, AST Ancona - UNIVPM, Fabriano, Italy, [2]Anaesthesia, Resuscitation, Intensive Care and Pain Management, UNIVPM, Ancona, Italy, [3]Anaesthesia, Resuscitation, Intensive Care and Pain Management, AST Ancona, Fabriano, Italy, [4]Anaesthesia, Resuscitation, Intensive Care and Pain Management, ASL Foggia, Cerignola, Italy.

Abstract:
Background: Lumbar plexus block (LPB) is an advanced regional anesthesia technique practiced by relatively few experienced regional anesthesiologists. Difficulties are linked to the depth of structures and the high risk of accidental punctures, lowering its safety expecially in obese patients. Given its usefulness in lower limbs surgery, we struggled to develop a new ultrasound-assisted operating protocol to increase its safety and constancy of performance.
Case Description: We performed an analgesic ultrasound-assisted ENS guided lumbar plexus block (single shot followed by perineural catheter placement) with alternative anatomical landmarks in a 50-years morbidly obese (124 kg x 170 cm - BMI 42,9) female patient undergoing left total knee replacement. Classic anatomical landmarks (Tuffier line) were impracticable. Before block execution, we obtained patient's consent for submitting this case study as an abstract.
Discussion: We started placing a convex probe in paravertebral position, longitudinal orientation, to localize L5 level in sagittal plane. Once identified, probe was rotated 90 degrees to show a transverse plane image; L5 spinous process showed as a shadow cone in the center of the image while transverse processes were recognized and their depth from skin measured. Transverse processes were detected as a safe target considering that lumbar plexus lies 2-3 cm deeper. To establish lateral needle entry point we refered to the "CUN" concept, a Traditional Chinese Medicine patient-tailored unit of measurement corresponding to the maximum width of the patient's thumb finger. Given that the bladder meridian point 26, located at 1,5 CUN laterally to the lower edge of L5 spinous process, if stimulated deeply with an acupuncture needle allows to reach the 3rd-4th-5th lumbar metamere, we considered it a good target to reach lumbar plexus. We converted the 1,5 CUN measure (traditionally defined as the distance between the 2nd and 3rd paired fingers measured at the level of the distal interphalangeal joint of patient's non dominant hand) in centimeters. Puncture was carried out on left L5 transverse process (identified by ultrasound) with a lateral drift of 1.5 CUN from the interspinous line; after bone contact (depth from skin was sonographically estimated), needle was orientated to pass L5 transverse process (cranially or laterally) advancing 2-3 cm deeper until ENS confirmation. Block was successful, no complications occurred.
Learning Point: Sonography let us quickly identify L5 transverse process and its depth. This can be easily obtained even in obese patients or those with unfavorable anatomy, unlike known ultrasound-guided lumbar plexus blocks (i.e. Shamrock and Trident techniques) where deep target structures are poorly visible increasing the risk of complications and failures. Moreover, compared to the "blind method" (Tuffier line) which doesn't consider anthropometric variants, the "1,5 CUN" measurement (and its conversion in cm) allowed a patient-tailored identification of the paravertebral entry point for the electrostimulated needle. Our approach, based on quick sonography and CUN measures combination, allowed us to increase lumbar plexus block safety and constancy of performance.

Author Disclosure Information:

E. Pisello: None.
Track (Complete): Regional Anaesthesia
Declaration (Complete):
***Was this abstract presented before March 2023?**: No
***Patient Consent**: Yes

Status: Finalized

Powered by cOASIS, The Online Abstract Submission and Invitation System SM
© 1996 - 2023 CTI Meeting Technology. All rights reserved. Privacy Policy