EP152 CONTENTS OF FREE VITAMIN D, SERUM URIC ACID, AND CHARACTERISTICS OF EPIDURAL ANALGESIA FOR LABOR IN PARTURIENT WOMEN WITH PREECLAMPSIA

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Background and Aims It is known that more than 40% of pregnant women have a deficiency of vitamin D. Many clinicians used hyperuricemia as indicator for preeclampsia. We study the relationship of pain in childbirth, characteristics of epidural analgesia in women with preeclampsia, blood serum level of uric acid and free vitamin D.

Methods The study group included patients with severe and moderate preeclampsia, alone have given birth vaginally with epidural analgesia. The control group – patients with physiological pregnancy, independently gave birth vaginally with epidural analgesia. Free vitamin D level was performed by enzyme immunoassay kits. The concentration of uric acid was determined spectrophotometrically. Primary study end points defining a base for the conclusions were as follows: level of free vitamin D, uric acid, the average period for delivery systolic and diastolic blood pressure in mmHg, dose of local anesthetic.

Results In patients with severe preeclampsia revealed: a pronounced deficiency of vitamin D, a tough hyperuricemia, had higher numbers mean arterial pressure du ring labor epidural analgesia in the background: on average during all periods of childbirth 140/90-150/100 mm Hg. In patients with moderate preeclampsia was diagnosed moderate vitamin D deficiency, mild hyperuricemia, blood pressure during childbirth averaged 130/90-125/85 mm Hg. In the control group the level of free vitamin D and the concentration of uric acid were in the normal range, blood pressure during labor averaged 105/60-120/70 mm Hg.

Conclusions In women with preeclampsia, low levels of free vitamin D and hyperuricemia are associated with higher demand for local anesthetics during epidural analgesia.

EP153 OPTIMAL VIEW DETECTION FOR ULTRASOUND-GUIDED SUPRACLAVICULAR BLOCK USING DEEP LEARNING APPROACHES

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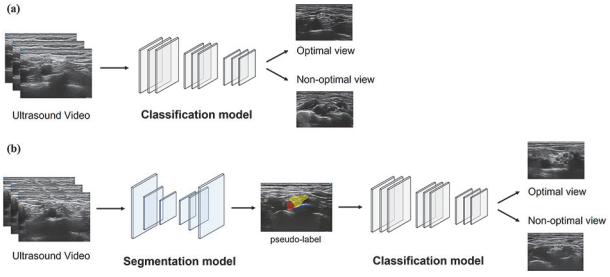
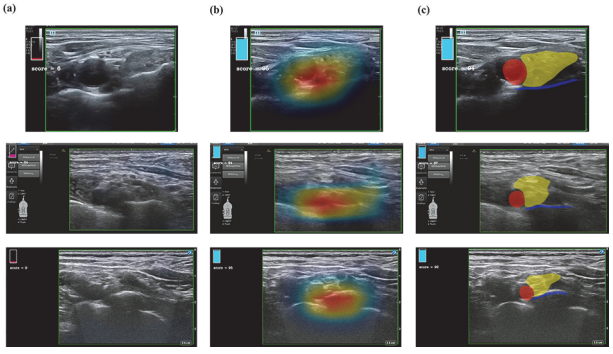
Background and Aims Successful ultrasound-guided supraclavicular block (SCB) requires the understanding of sonoanatomy and identification of the optimal view. Segmentation using a convolutional neural network (CNN) is limited in clearly determining the optimal view. The present study aims to develop a computer-aided diagnosis (CADx) system using a CNN that can determine the optimal view for complete SCB in real time.

Methods Ultrasound videos were retrospectively collected from 881 patients to develop the CADx system (600 to the training and validation set and 281 to the test set). The CADx system included classification and segmentation approaches, with Residual neural network (ResNet) and U-Net, respectively, applied as backbone networks. In the classification approach, an ablation study was performed to determine the optimal architecture and improve the performance of the model. In the segmentation approach, a cascade structure, in which U-Net is connected to ResNet, was implemented. The performance of the two approaches was evaluated based on a confusion matrix.

Results Using the classification approach, ResNet34 and gated recurrent units with augmentation showed the highest performance, with average accuracy 0.901, precision 0.613, recall 0.757, f1-score 0.677 and AUROC 0.936. Using the segmentation approach, U-Net combined with ResNet34 and augmentation showed poorer performance than the classification approach.



Abstract EP153 Figure 1 Overview of computer-aided diagnosis systems for determining the optimal view for ultrasound-guided supraclavicular block. (a) Classification approach. (b) Segmentation approach, in which the cascade structure of the segmentation model served as input to the classification model



Abstract EP153 Figure 2 Qualitative results of deep learning approaches for determining optimal views for ultrasound-guided supraclavicular block. The bar at the top-left represents the probability predicted by the convolutional neural network model. TE7, Venue Go, and X-Porte results are pictured in order from top to bottom. (a) Original ultrasound images. (b) Results predicted by the classification approach: gradient-weighted class activation mapping. (c) Results predicted by the segmentation approach