Operating Characteristics of Point-of-Care Ultrasound in Identifying Skin and Soft Tissue Abscesses in the Emergency Department

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Abstract : Background: Emergency physicians frequently evaluate skin and soft tissue infections in order to differentiate abscess from cellulitis. This helps determine which patients will benefit from incision and drainage. Our objective was to determine the operating characteristics of point-of-care ultrasound (POCUS) compared to clinical examination in identifying abscesses in emergency department (ED) patients with features of skin and soft tissue infections. Methods: We performed a comprehensive search in the following databases: Medline, Web of Science, EMBASE, CINAHL and Cochrane Library. Trials were included if they compared the operating characteristics of POCUS with clinical examination in identifying skin and soft tissue abscesses. Trials that included patients with oropharyngeal abscesses or that requiring abscess drainage in the operating room were excluded. The presence of an abscess was determined by pus drainage. No pus seen on incision or resolution of symptoms without pus drainage at follow up, determined the absence of an abscess. Quality of included trials was assessed using GRADE criteria. Operating characteristics of POCUS are reported as sensitivity, specificity, positive likelihood (LR+) and negative likelihood (LR-) ratios and the respective 95% confidence intervals (CI). Summary measures were calculated by generating a hierarchical summary receiver operating characteristic model (HSROC). Results: Out of 3203 references identified, 5 observational studies with 615 patients in aggregate were included (2 adults and 3 pediatrics). We rated the quality of 3 trials as low and 2 as very low. The operating characteristics of POCUS and clinical examination in identifying soft tissue abscesses are presented in the table. The HSROC for POCUS revealed a sensitivity of 96% (95% CI = 89-98%), specificity of 79% (95% CI = 71-86), LR+ of 4.6 (95% CI = 3.2-6.8), and LR- of 0.06 (95% CI = 0.02-0.2). Conclusion: Existing evidence indicates that POCUS is useful in identifying abscesses in ED patients with skin or soft tissue infections.

Keywords : abscess, point-of-care ultrasound, pocus, skin and soft tissue infection

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