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Diagnostic Efficiency of Point-Of-Care Lung Ultrasonography in the Diagnosis of Adult Community-Acquired Pneumonia – A Single-Centre Study in Southeastern Nigeria

Efficacité diagnostique de l'échographie pulmonaire au point de soins dans le diagnostic de la pneumonie communautaire chez les adultes - Une étude monocentrique dans le sud-est du Nigéria

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ABSTRACT

BACKGROUND: Lung ultrasonography is an emerging tool in diagnosing community-acquired pneumonia (CAP) – a major cause of mortality worldwide. The objective of the study was to determine the diagnostic performance of point-of-care ultrasound (POCUS) of the lung compared to the chest radiograph in the diagnosis of CAP in adults.

METHODS: Adults \geq 18 years presenting at the general and medical outpatient clinics, medical and emergency wards with symptoms of suspected CAP were evaluated using a portable ultrasound device and single posteroanterior chest radiograph. Sensitivity, specificity, positive and negative predictive values (PPV and NPV), positive and negative likelihood ratios (LR+ and LR-) with corresponding 95% confidence intervals were computed for the lung ultrasound (LUS) against the chest radiograph as the criterion standard.

RESULTS: Out of the 65 patients eventually studied, 50 (76.9%) were diagnosed with pneumonia by chest radiograph. The sensitivity, specificity, PPV, NPV, LR+, LR- and DOR for the LUS against the chest radiograph, respectively, were 96% (95%CI, 86.3% – 99.5%), 93.3% (95%CI, 68.1% – 99.8%), 98.0% (95%CI, 87.8% - 99.7%), 87.5% (64.1% - 96.5%), 14.4 (95%CI, 2.2 – 95.7), 0.04 (95%CI, 0.01 – 0.17) and 336 (28.3 – 3985.0). The overall accuracy was 95.4% (95%CI, 87.1 – 99.0%). The median time to completion of the LUS was 13 minutes.

CONCLUSION: Lung ultrasound at the point of care is a reasonably accurate tool for the diagnosis of CAP in adults presenting with typical features. **WAJM 2024; 41 (5): 515 - 523**

KEYWORDS: Lung ultrasound, Chest radiograph, Community-acquired pneumonia, Diagnostic accuracy, Resource-limited

RÉSUMÉ

CONTEXTE: L'échographie pulmonaire est un outil émergent dans le diagnostic de la pneumonie communautaire (CAP) – une cause majeure de mortalité dans le monde entier. L'objectif de l'étude était de déterminer la performance diagnostique de l'échographie pulmonaire au point de soins (POCUS) par rapport à la radiographie thoracique dans le diagnostic de la CAP chez les adultes.

MÉTHODES: Les adultes \geq 18 ans se présentant aux cliniques générales et médicales, aux services médicaux et d'urgence avec des symptômes de CAP suspectée ont été évalués à l'aide d'un appareil d'échographie portable et d'une radiographie thoracique postéro-antérieure unique. La sensibilité, la spécificité, les valeurs prédictives positive et négative (PPV et NPV), les rapports de vraisemblance positifs et négatifs (LR+ et LR-) avec les intervalles de confiance correspondants à 95 % ont été calculés pour l'échographie pulmonaire (LUS) par rapport à la radiographie thoracique comme norme de référence.

RÉSULTATS: Sur les 65 patients étudiés, 50 (76,9 %) ont été diagnostiqués avec une pneumonie par radiographie thoracique. La sensibilité, la spécificité, la PPV, la NPV, les LR+, LR- et DOR pour la LUS par rapport à la radiographie thoracique étaient respectivement de 96 % (IC à 95 %, 86,3 % – 99,5 %), 93,3 % (IC à 95 %, 68,1 % – 99,8 %), 98,0 % (IC à 95 %, 87,8 % - 99,7 %), 87,5 % (64,1 % - 96,5 %), 14,4 (IC à 95 %, 2,2 – 95,7), 0,04 (IC à 95 %, 0,01 – 0,17) et 336 (28,3 – 3985,0). La précision globale était de 95,4 % (IC à 95 %, 87,1 – 99,0 %). Le temps médian pour l'achèvement de la LUS était de 13 minutes.

CONCLUSION: L'échographie pulmonaire au point de soins est un outil raisonnablement précis pour le diagnostic de la CAP chez les adultes présentant des caractéristiques typiques.

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MOTS-CLÉS: Échographie pulmonaire, Radiographie thoracique, Pneumonie communautaire, Précision diagnostique, Ressources limitées

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