

**ASSESSMENT OF EXTRAVASCULAR LUNG  
WATER BY CHEST SONOGRAPHY IN  
PATIENTS WITH SEPSIS: PROGNOSTIC  
IMPLICATIONS IN DEVELOPMENT OF ACUTE  
RESPIRATORY DISTRESS SYNDROME AND  
MORTALITY**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سَبَّحَانَكَ يَا مُعَلِّمَ لَنَا  
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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## *Abstract*

**Assessment of extravascular lung water by chest Sonography in patients with sepsis: prognostic implications in development of acute respiratory distress syndrome and mortality.**

**Aim of work:** To evaluate the lung ultrasound score in prediction of ARDS and mortality in patients diagnosed with sepsis in (ICU).

**Patients & methods:**

Thirty five patients fulfilling criteria of sepsis were enrolled in our study. Lung ultrasound examination was performed three times; on the day of admission in patients diagnosed with sepsis and in two other occasions; in the third and fifth days and if ARDS developed earlier, the third measure is performed accordingly.

**Results:**

Mean age was  $56.97 \pm 17.55$ , 45.71% were males. The total LUS score was significantly higher in patients who developed ARDS compared to those non ARDS at all different exams., on day 1(LUS1) ( $18.77 \pm 3.90$  vs.  $14.05 \pm 7.41$ ,  $p = 0.045$ ), day 3(LUS2) ( $21.29 \pm 2.56$  vs.  $11.14 \pm 6.94$ ,  $p < 0.001$ ) and day 5 (LUS 3) ( $27.08 \pm 3.09$  vs.  $8.60 \pm 7.34$ ,  $p < 0.001$ ). ROC curve was predictive for ARDS, with a cutoff value for  $LUS \geq 16.5$ , a sensitivity of 92.3%, and a specificity of 71.9%,  $p < 0.001$ ). (AUC of 0.885 (C.I. 0.823- 0.946). Out of our 35 patients, 21 patients died & 14 survived at the end of their ICU stay. Mortality was higher in patients who developed ARDS compared to those who did not progress to ARDS (13 (62%) vs. 8 (38%),  $p = 0.001$ ). ROC curve was predictive for mortality, with a cutoff value for  $LUS \geq 13$  , a sensitivity of 93.4%, and a specificity of 83.3%,  $p < 0.001$ ). (AUC of 0.910, (C.I. 0.847 - 0.973).

On multivariate analysis total number of affected lung regions was the only independent predictor of ARDS [adjusted odds ratio (OR) 1.876,  $p = 0.001$ ] and LUS score was the only independent predictor of mortality [adjusted odds ratio (OR) 1.324,  $p < 0.001$ ].

**Conclusion:** lung ultrasound performed early in patients with sepsis predicts development of ARDS and mortality.

**Key Words:** extravascular lung water; chest sonography; sepsis; acute respiratory distress syndrome.



## List of Contents

	Page
List of Abbreviations	I
List of Tables	IV
List of Figures	VIII
Introduction	1
Aim of the study	5
Review of Literature	
Chapter (1): <ul style="list-style-type: none"><li>• Transthoracic Chest Ultrasonography</li></ul>	6
Chapter (2): <ul style="list-style-type: none"><li>• Sepsis</li></ul>	32
Chapter (3): <ul style="list-style-type: none"><li>• Impact Of Sepsis On Lung And Mortality</li></ul>	54
Patients and Methods	76
Results	84
Discussion	141
Limitations	157
Conclusion	158
Recommendations	189
Summary	160
References	165
Arabic Summary	