Value OfThoracic Ultrasound in Intensive Care Unit Patients With Different Pulmonary Abnormalities In FayoumUniversity Hospital.

M.D Thesis

Submitted by

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Summary

Transthoracic ultrasound has become now an important diagnostic tool in modern chest medicine as it is a non-invasive, readily available imaging modality that can complement physical examination and clinical evaluation. It can be performed at the bedside and has been used successfully todiagnose pneumothorax, pleural effusion, pneumonia, lung edema, as well as pulmonary embolism.

This study was designed to investigate the value of chest ultrasound in diagnosis of different respiratory abnormalities in critically ill patients admitted to intensive care unit in comparison to common imaging modalities.

This study included 109 patients who fulfilled the selection criteria & formed the study population.

The included patients were subjected to the following:

1) **Written informed consent:**

2) **History**

3) **Clinical examination.**

4) **Plain chest x-ray**

5) **CT chest**

6) **Other diagnostic tools** when needed (as pleural aspirate examination , fibro-optic bronchoscopy and ECHO)

7)Transthoracic ultrasonography

The results of our study were as following:

- There were 96 patients out of 109 diagnosed definitively by ultrasound and were classified into:pleural effusion in 35 pts.,

- pneumonia in 45pts., pulmonary edema in 17pts, pneumothorax in 8 pts. , COPD in 8pts. , BA in 5pts., IPF in 6 pts. , lung contusion in 3pts.,pulmonary embolism in 2pts.,and ARDS in 2 patients.

- Pleural effusion was detected in 35 patients, 9 were transudate effusion and 26pts. Had exudate pleural effusion. There were 9 patients out of 13pts with exudate pleural effusion had complex non septated pattern and 4 pts. Had complex septatedpattern.

- Pneumonia was diagnosed in 45 patients by LUS .lung ultrasound showed C profile in 43.8% of patients, A+ PLAPS profile in 22.9 % of patients, AB profile in 20.8% of patients with sensitivity and B' profile in 12.5% of patients.

- Pulmonaryedema was diagnosed in 17 pts. with B profile in 100%

- Pneumothorax was diagnosed in 8 pts. with A`-profile in 100% of patients and lung point appeared in 75% of patients with sensitivity and specificity 100% and 100% respectively .

- COPD and asthma was diagnosed in 13pts. and they were presented by A+ no PLAPS in100% of patients.

- IPF was diagnosed by LUS in6pts. andthey werepresenting by B profile.

- The sensitivity, specificity, and diagnostic accuracy of CXR were 61.2 **%**, 100**%** and 82.6**%** for **pneumonia** respectively, 62.5 **%**, 100**%** and 97.2**%** for **Pneumothorax** respectively , 44.4 **%**, 100**%** and 90.8**%** for **Pulmonary edema** respectively, 0.0 **%**, 100 **% and**98.2%for **AECOPD & asthma** respectively, 66.6%,98.9%and 96.2 for **IPF** respectively, and 65% , 69%and 80% for **Pleural effusion** respectively. The corresponding values of LUS for

pneumonia were 93.8% , 95.7% and 95.8% respectively, **pneumothorax** were 100% , 100% and 100% respectively ,**pulmonary edema** were 100% , 96.8% and 99% respectively, **COPD & asthma** 100% , 88.9 % and 88.9% respectively, **Idiopathic pulmonary fibrosis** were 100%, 96.8%,and 99.0 % respectively ,and **pleural effusion** were 100% , 100% and 100% respectively.

- Over all accuracy sensitivity and specificity of ultrasound were 93.2%, 100% respectively and over all accuracy sensitivity and specificity of x-ray were 55.8%,50% respectively with p-value <0.05.

- There were 21 out of 109 patients presenting by circulatory shock (19.3%). **Obstructive shock** was diagnosed in 5 patients ,they were presenting byA profile, A+ PLAPS profile , A' and A' Lung point profile with sensitivity and specificity 83.3 % ,100 % respectively , **Cardiogenic shock** was diagnosed in 5 patients with B profile in 100 %of patients, with sensitivity and specificity 100 % ,100 % respectively , **Hypovolemic shock** was diagnosed in 4 patients with A+ PLAPS profile, A-no PLAPS and C with sensitivity and specificity 80 % ,94.4 % respectively and **Septic shock** was diagnosed in 4 patients with A+ PLAPS profile and C profile with sensitivity and specificity 80 % ,94.4 % respectively .