A287 - Diaphragmatic dysfunction in critically ill patients and its impact on outcome. Assessment of Diaphragmatic thickness and excursion by Ultrasound.

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Introduction:
The diaphragm is considered as the main respiratory muscle, and its dysfunction predisposes to many respiratory complications. Ultrasound (US) is now an accepted method of measuring Diaphragmatic Excursion (DE) and Diaphragmatic thickness (DT). We aimed to detect Diaphragmatic Dysfunction (DD) in critically ill patients and its impact on outcome.

Methods:
We prospectively recruited consecutively any critically ill adult requiring admission to MICU with SOFA ≥ 2. Exclusion criteria: diaphragmatic or spine injury, neuromuscular disease, any usage during hospital stay of paralytic agents, aminoglycosides, sedatives or analgesia other than morphine. The right hemi-diaphragm was evaluated by M mode US for DE and B mode US for DT with the patients in the supine position. DT and DE and laboratory measurements were taken on admission and every 48 hr for a total of 3 readings (Day 0, 2, 4). Patients were followed up for length of ICU stay and 30 day mortality. DD was diagnosed if a DT ≤0.2 cm and DE ≤1.0 cm.

Results:
The study included 106 subjects. In the total studied group mean Age was 51.4 ± 16.3 years, 49 (46.2 %) were males while 57 (53.7 %) were females. The mean SOFA was 5.33 ± 3.66 and Mean APACHE II was 15.42 ±7.91. DD group included 38 (35.8 %) vs. Non DD group included 68 (64.1 %) subjects (p<0.001). PaCO₂ was higher (48.2±4.1 vs. 39.3±6.9 mmHg, p=0.01) in DD vs. NDD group respectively. WBCs was higher (15.18×10³ ±7.2×10³ vs. 11.78×10³ ± 2.9×10³ cell/ml, p=0.01) in DD vs. NDD group respectively. LOS was significantly higher (9.70±0.4 vs. 6.68±1.3 days, p=0.02) in DD vs. NDD group respectively. Mortality was significantly higher (81.5% vs. 23.5%, p<0.001) in DD vs. NDD group respectively.

Conclusion:
DD was present in nearly one third of ICU patients which was largely associated with a longer ICU stay and a higher mortality. PaCO₂ and WBCs were associated with a negative effect on diaphragmatic function.

Image 1:
Comorbidities on admission in Diaphragmatic Dysfunction (DD) and Non Diaphragmatic Dysfunction (NDD)