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Title: Determination of critical threshold value of SPO₂/FiO₂ ratio in the diagnosis of acute lung injury

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Body: The determination of the critical threshold of S/F ratio for ALI/ARDS was conducted and evaluated. Corresponding measurements of PF and SF ratio was obtained from 106 intubated patients with the diagnosis of Respiratory Failure Type I, non cardiogenic(ALI) admitted in the intensive care units of Philippine Heart Center from June 2008 to December 2011. A Linear Regression Model [S/F = 29.6 + 1.09(P/F); p < 0.000] was obtained to determine the critical threshold of the SF ratio among Filipino patients. A correlation coefficient of 0.804 was obtained between the P/F and S/F ratio which yielded the critical threshold for SF ratio of 248 for PF ratio ≤ 200 and a critical threshold SF ratio of 357 for PF ratio ≤ 300. Analysis between ROC AUC of 0.645 and the inverse of FiO₂ correlates with PF ratio (r=0.604) indicate a consistent agreement between that S/F and P/F ratios. The SF ratio threshold of 248 (corresponding to P/F ≤ 200) yielded a sensitivity of 100% and specificity value of 96.23% with a likelihood ratio of 26.5 (95%CI: 6.80 – 103.20) for ARDS, while S/F ratio threshold of 357 (corresponding to P/F ≤ 300) had a sensitivity and specificity of 100% and 98.19%, respectively with likelihood ratio of 66.23 (95%CI: 18.7 – 283.8) for ALI. The high correlation between the SF and PF ratio and critical as well as the consistent relationships between ROC AUC and inverse FiO₂ vs. PF ratio, excellent sensitivity and very satisfactory specificity for ARDS and ALI indicate that the threshold SF ratio of 248 and 357 for PF ratio of 200 and 300 can measure and discriminate ARDS and ALI among critically ill Filipino patients.