HEPATIC DYSFUNCTION AND MORTALITY IN ARDS PATIENTS

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Background: Bilirubin is validated to detect and stratify the hepatic dysfonction in ICU patients. Multiple organ failure complicates the ARDS evolution and is associated with high mortality. The impact of the initial hepatic dysfunction on ARDS mortality is poorly investigated. We have evaluated the incidence and the prognostic impact of hyperbilirubinemia at the initial phase of ARDS.

Methods: A total of 805 patients with ARDS were retrospectively analyzed. This population was extracted from 2 multicenter, prospective and randomised studies (PROSEVA[1] and ACURASYS[2]). ARDS was defined in these 2 studies as the ratio of the partial pressure of arterial oxygen to the fraction of inspired oxygen of less than 150 mmHg with a positive end-expiratory pressure of at least 5 cm of water and a tidal volume close to 6 ml per kilogram of predicted body weight. Total serum bilirubin was measured at inclusion and at day 2, 4, 7 and 14. As primary endpoint, we evaluated if bilirubin at inclusion was associated with day-90 mortality. Multivariate logistic Cox regression was used to determine if hyperbilirubinemia was independently associated with day-90 mortality.

Results: The 90-day mortality was 33.8% (n=272). Non survivors patients were older (66±14 vs. 56±15 yr, $p<0.0001$), had higher SOFA score (10.7±3.6 vs. 9.2±3.4, $p<0.0001$) and had more likely a medical diagnostic on admission (87.5% vs. 80.3%, $p<0.009$) than survivors. At inclusion, the SOFA score without the liver sub-score (10.4±2.9 vs. 9.0±3.0, $p<0.0001$) and the serum bilirubin level (36.1±57.0 vs 20.5±31.5, $p<0.0001$) were significantly higher in non survivors as compared with the survivors. In the multivariate analysis, age, SOFA score w/o liver sub-score, serum bilirubin level ≥33 µmol/L and arterial pH were independently associated with 90-day ARDS mortality.

Conclusion: Bilirubin used as a surrogate of hepatic dysfunction and measured early in the course of ARDS is associated with day-90 mortality.