

# MEASUREMENT OF AORTIC FLOW IN RESPONSE TO FLUID USING ESOPHAGEAL DOPPLER AND MONOCYTE CD 86 EXPRESSION AS PROGNOSTIC MARKERS OF POST-INFLAMMATORY IMMUNODEFICIENCY IN CRITICALLY ILL PATIENTS

## ABSTRACT

**Background:** Surgery, poly trauma, burns, stroke and pancreatitis are often accompanied by a massive activation of the immune system called systemic inflammatory response syndrome. Due to counter regulatory mechanisms such as endocrine, paracrine or autocrine actions along with intracellular alterations this hyper-inflammation is followed by a temporary immunodeficiency called compensatory anti-inflammatory response syndrome. In its most severe form it is also referred to as immune paralysis state. Esophageal Doppler monitoring allows monitoring of the hemodynamic effects of ionotropic drugs and volume replacement. Thus hypotensive patients with acute circulatory failure, restoration of an adequate mean arterial pressure may be associated with changes in aortic diameter that could significantly influence the circulation of aortic blood flow. If aortic diameter and flow increase with fluid loading with increasing arterial pressure then the estimated increase in aortic blood flow assuming a constant aortic diameter would be less than the true increase in aortic blood flow.

**Methods and results:** analysis of blood samples that entered the clinical immunologic diagnostics and of cells from an in vitro model of postinflammatory immunodeficiency. Monitoring aortic blood flow by esophageal doppler. **Setting:** University laboratory **subjects:** Intensive care unit (ICU) patients at the university hospital. **Methods:** twenty patients were subjected to full history taking, complete detailed clinical examination, vital signs, length of stay, full laboratory Examination, micro-biological investigations, sofa score, measurement of monocyte expressive co-stimulatory factor cd86 using systematic flow cytometry analysis technique, measurement of aortic flow using esophageal Doppler monitoring in assessing fluid responsiveness, outcome classified into survivors and non-survivors. **Result:** hemodynamics parameters in survivors and non-survivors showed a highly statistical significance as regards heart rate, temperature and respiratory rate and a statistical significance as regards mean arterial blood pressure and central venous pressure. Laboratory parameters showed a highly significant statistical difference as regards total leucocytic count, sgpt, prothrombin time, international normalized ratio, serum creatinine and a statistical difference as regards platelet count and serum albumin, as regards arterial blood gases parameters PH, PCO<sub>2</sub> showed a highly significant difference and a significant difference as regards HCO<sub>3</sub>. CD86 by percentage expression showed insignificant difference throughout the four days meanwhile relative intensity showed a highly significant difference in day one, three and four and mean fluorescence ratio showed a significant statistical difference in day one and three and a highly significant difference in day four while in day two percentage of expression, mean fluorescence ratio and relative intensity all were insignificant statistically aortic blood flow showed a highly significant statistical difference after fluid challenge in day one and day four as regards sofa score showed a significant statistical difference in day one and day two; and a highly significant statistical difference in day three and four. by correlation between aortic blood flow in day one and sofa score in day one a near one perfect correlation between both parameters.

**Conclusion** monocyte CD86 trend from day one to day three by relative intensity or mean fluorescence ratio together with aortic blood flow in day one, sofa score in day one, laboratory parameters, vital signs and arterial blood gases parameters could be helpful diagnostic and prognostic variables in ICU patients.

**Key words** CD 86 monocyte, percentage of expression, mean fluorescence ratio, relative intensity, aortic blood flow, sofa score