

Diastolic Shock Index - A Possible New Arrow in Our Quiver against Septic Shock

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The so called “shock index” (SI) is defined as heart rate divided by the systolic blood pressure. It has been developed to identify critically ill patients and has been studied in a variety of conditions including haemorrhagic shock due to traumatic and obstetric causes, distributive septic shock, cardiogenic shock after myocardial infarction and obstructive shock due to massive pulmonary embolism. However, most of the scientific publications are dealing with patients suffering from hypovolaemic, haemorrhagic shock, though [1,2].

Although the shock index can be confounded in some patients (e.g. by antihypertensive medications), an elevated value is associated with an increase in mortality and the need of massive transfusion in trauma patients [3,4].

A very interesting paper by Ospina-Tascon., et al. published in *Annals of Intensive Care* [5] introduced the concept of the diastolic shock index (DSI) and investigated its usefulness in patients with septic shock. The diastolic shock index is calculated by dividing the heart rate by the diastolic blood pressure. The authors compared DSI values before and after the initiation of vasopressors and used them for classification of outcome. Higher DSI values were associated with higher mortality, while isolated low diastolic blood pressure and isolated elevated heart rate were not. Additionally, high DSI values performed similar to SOFA score and lactate levels, for mortality prediction, while diastolic pressure and heart rate did not.

Diastolic blood pressure correlates with vascular resistance, assuming a constant flow and competent aortic valve. Ospina-Tascon., et al. showed in their paper, that tachycardia with persistent low diastolic pressures seems to be associated with a higher relative risk of death than high heart rates alone. A higher DSI seems to be more accurate in this perspective than the traditional SI.

These findings raise the question, if the DSI is a more accurate tool in predicting septic shock due to vasoplegia, than the traditional shock index, which was extensively validated in hypovolaemic shock.

The incorporation of the DSI could therefore present an easy and non-invasive way to rapidly identify patients at risk from persistent vasoplegic shock and it will be very interesting to see, what future studies in this field will teach us.

Bibliography

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