

Glycolysis in septic patients during early ICU hospitalization shows differences vis-à-vis shock resolution

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Introduction

In glycolysis, glucose is converted into pyruvate.

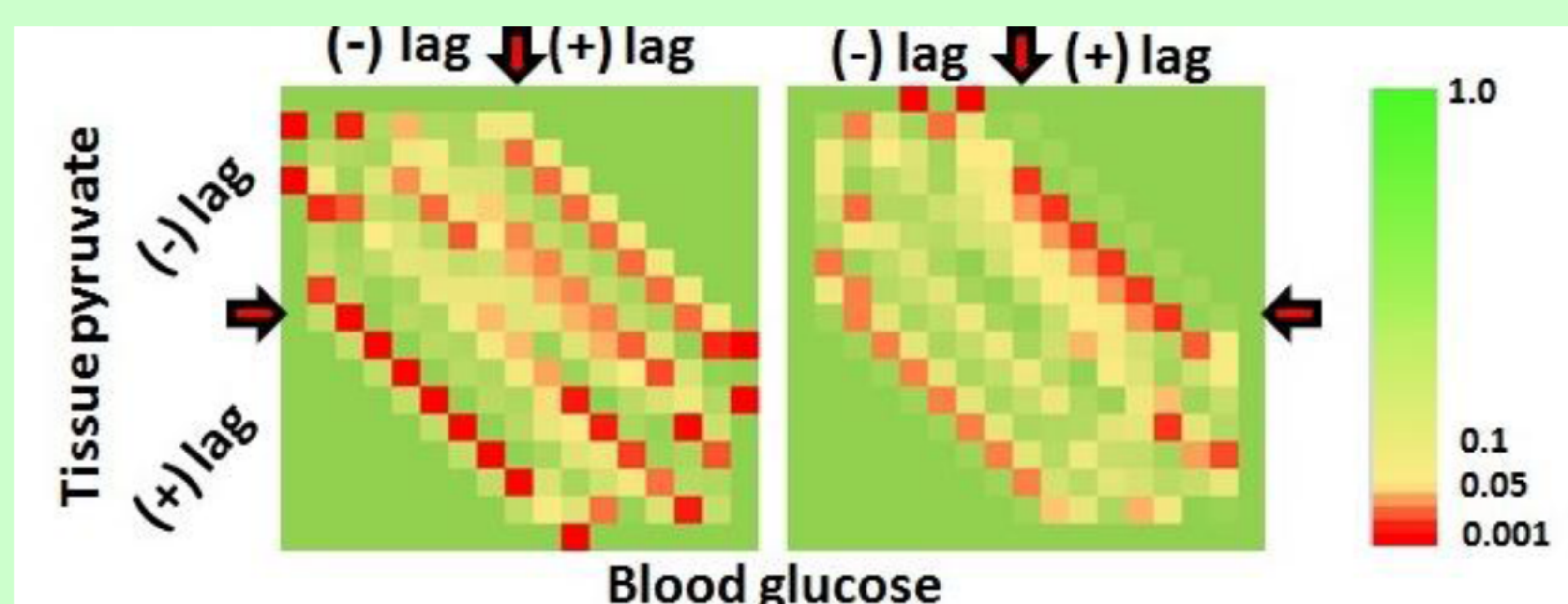
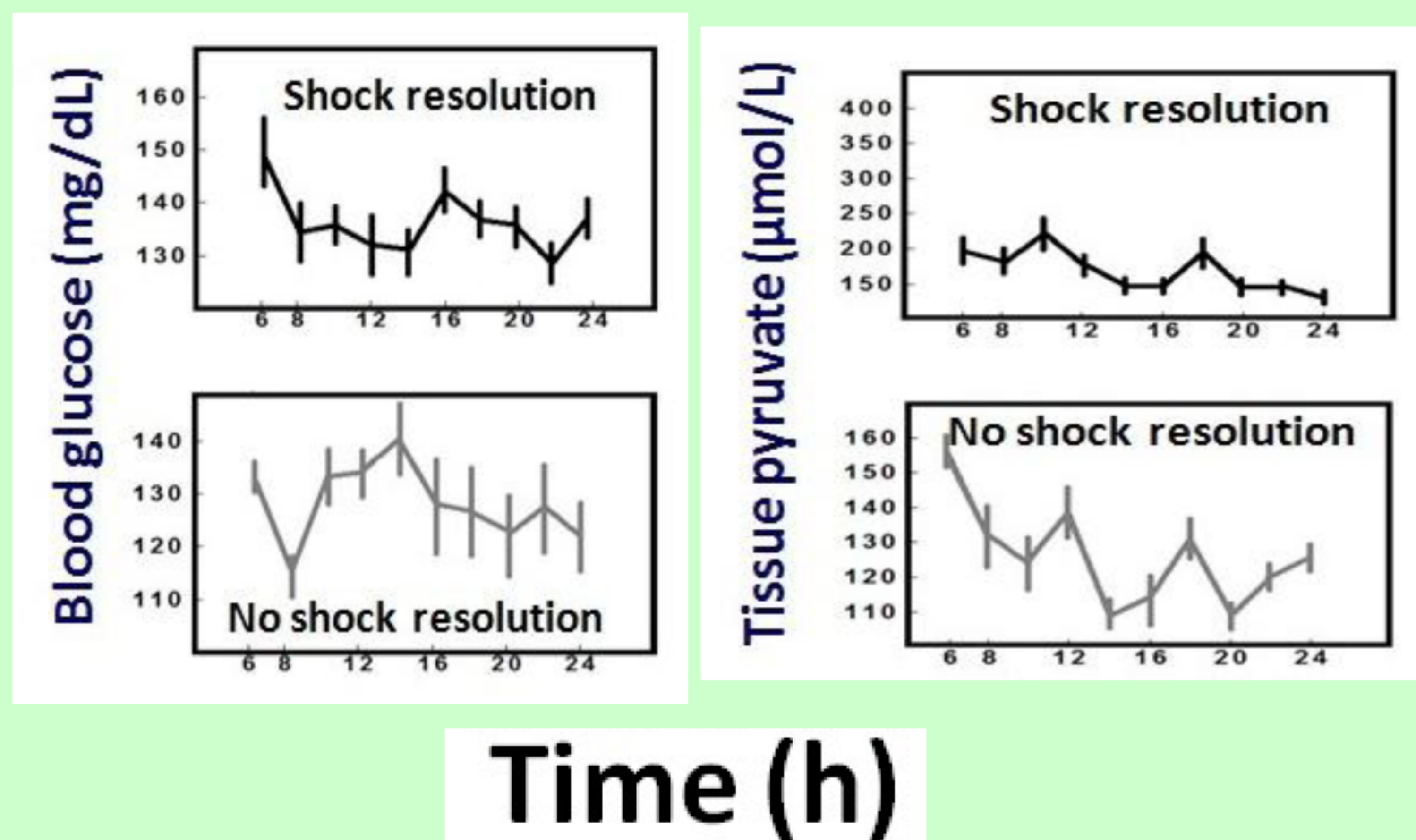
Patients with sepsis are prone to numerous metabolic alterations, including changes in carbohydrate metabolism.

The aim of this study was to assess glucose metabolism in septic patients during the first day of ICU hospitalization and evaluate this vis-à-vis shock resolution.

Subjects and methods

Ten patients with septic shock during the first day of ICU hospitalization were studied; measurements were done every 2 hours in blood for glucose and in tissue (with microdialysis; MD) for pyruvate. Patients with diabetes were excluded. Six patients recovered from shock within 1-9 days. We analyzed the data on a cross-correlation matrix of 2-hours' increments of blood glucose and MD pyruvate for patients with shock resolution and no shock resolution separately.

Results (I)



Cross correlation's p values of blood glucose vs tissue pyruvate for septic patients with shock resolution (left) and no shock resolution (right); x-axis is for blood glucose and y-axis for tissue pyruvate; values are in 2-hour increments, with negative lag, no lag (arrows), and positive lag

Results (II)

In patients with shock resolution significant correlations were noted for blood glucose vs MD pyruvate (maximum $r:+0.96$, $p:0.004$; with pyruvate lagging by 12 hours); no significant correlations between blood glucose and MD pyruvate were measured in the patients with no shock resolution.

Discussion

During the first day of ICU hospitalization septic shock patients who eventually resolved their shock status showed active glycolysis, whereas patients who remained in shock had early on no appreciable glycolysis.

References

- Scand Journal Trauma, Resusc Emerg Med 2014, 22:11
- Intensive Care Med 2011; 37:1756–1764

