

## **The role of perfusion index and plethysmography variability index for predicting dehydration severity in patients with acute gastroenteritis**

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### **Background:**

Acute gastroenteritis is a clinical syndrome that may cause severe dehydration in affected individuals and a reason of mortality and morbidity in all age groups. Measurement of perfusion index and plethysmography variability index may provide emergency physicians valuable information about hemodynamics of the patient.

### **Objectives:**

Our study aimed to investigate the role of perfusion index and plethysmography variability index measurement at admission for estimating dehydration severity and determining the possible change in those parameters after fluid replacement among patients presenting to emergency department with acute gastroenteritis.

### **Methods:**

This was a prospective cross-sectional study. Patients diagnosed with acute gastroenteritis at the emergency department were consecutively enrolled. The two groups were defined according to the severity of dehydration: mild and moderate/severe dehydration groups. The values of perfusion index and plethysmography variability index of all patients were measured.

### **Results:**

A total of 180 patients were included in the study. As compared with the mild dehydration group, moderate/severe dehydration group had a significantly lower perfusion index value and significantly higher plethysmography variability index value on admission ( $p < 0.001$  for both comparisons). Among moderate/severe dehydration patients, perfusion index value significantly increased and plethysmography variability index significantly decreased after treatment ( $p < 0.001$ ). There was a significant positive correlation between osmolarity and plethysmography variability index ( $r = 0.298$ ;  $p = 0.007$ ) and a significant negative correlation between osmolality and perfusion index ( $r = -0.259$ ;  $p = 0.019$ ) in the patients with moderate/severe dehydration.

### **Conclusion:**

The study shows that perfusion index and plethysmography variability index may be useful for determining the severity of dehydration in acute gastroenteritis and may be used for assessing the response to fluid replacement especially in patients with severe dehydration at emergency department.