THE EFFECT OF MIDODRINE ON THE DURATION OF INTRAVENOUS VASOPRESSORS IN SEPTIC SHOCK GUIDED BY ELECTRICAL CARDIOMETRY

Tamer Abdallah Helmy, Ahmed Moustafa Elmenshawy, Ahmed Mohammed Nabil, Ahmed Mahmoud Awny Elsayed
Department of Critical Care Medicine, Faculty of Medicine, Alexandria University

INTRODUCTION

Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection; it is characterized by an underlying circulatory, cellular and metabolic abnormality.

Septic shock is among the most common reasons for admission to ICU throughout the world, and is associated with a higher risk for mortality and morbidity.

IV vasopressors are a crucial component in the management of persistent severe hypotension and shock state, the ongoing administration of IV vasopressors, even at low rate, prevent transferring patients out of the ICU which has many economic burdens. prolonged use of IV vasopressor may also increase the risk of peripheral and visceral ischemia, and may also lead to direct cardiac toxicity.

Midodrine is a peripherally acting alpha-1 adrenergic agonist; it causes modest elevation in standing and supine pressure.

AIM OF THE WORK

The aim of this study was to evaluate whether oral administration of midodrine is an effective adjunct to allow early liberation of IV vasopressors and allow earlier discharge from ICU compared to control patients.

PATIENTS AND METHODS

Patients: 70 patients diagnosed with septic shock, admitted to critical care units at Alexandria university hospitals, and demonstrated clinical stability with stable or decreasing doses of IV norepinephrine.

Patients were randomly assigned into two groups:

Group (I): received IV norepinephrine only

Group (II): received IV norepinephrine with adjunctive midodrine.

Methods: A prospective controlled study was conducted:

The following data were collected from every patient after enrollment and during the period of the study: Age and sex, past medical history, (SOFA) Score, APACHE II Score, Glasgow Coma Scale, Laboratory investigations, Vital signs, CVP, SCVO2 %, lactate level ,Urine output, SVR and CO by electrical cardiometry. Patients in the midodrine group received oral midodrine (10 mg three-times daily) in addition to norepinephrine until cessation of IV norepinephrine or an adverse event occurs.

RESULTS

Table 1: Comparison between both groups regarding MAP

MAP (mmHg)	Group I (n = 35)	Group II (n = 35)	p
Day 1			
Min.–Max.	63.0–68.0	64.0–75.0	<0.001*
Mean±SD.	65.71±1.43	69.89±2.15	
Day 2			
Min.–Max.	67.0–77.0	68.0–85.0	<0.001*
Mean±SD.	70.40±3.39	79.09±4.47	
Day 3			
Min.–Max.	69.0–85.0	72.0–95.0	<0.001*
Mean±SD.	75.14±4.77	85.46±4.32	
Day 4			
Min.–Max.	70.0–90.0	77.0–95.0	<0.001*
Mean±SD.	81.31±6.15	89.60±3.52	
Day 5			
Min.–Max.	80.0–93.0	80.0–95.0	<0.001*
Mean±SD.	87.63±3.45	92.71±3.50	

Table 2: Comparison between both groups as regard norepinephrine dose

Norepinephrine dose (mcg/min.)	Group I (n = 35)	Group II (n = 35)	p
Day 1			
Min.–Max.	8.0–8.0	6.60–8.0	<0.001*
Mean±SD.	8.0±0.0	7.32±0.67	
Day 2			
Min.–Max.	5.20–8.0	3.60–6.60	<0.001*
Mean±SD.	6.46±0.74	5.27±0.98	
Day 3			
Min.–Max.	2.60–6.60	0.0–4.50	<0.001*
Mean±SD.	5.03±1.02	2.94±1.20	
Day 4			
Min.–Max.	1.90–4.50	0.0–2.60	<0.001*
Mean±SD.	3.61±0.96	0.45±0.85	
Day 5			
Min.–Max.	0.0–3.80	0.0–0.0	<0.001*
Mean±SD.	1.52±1.35	0.0±0.0	

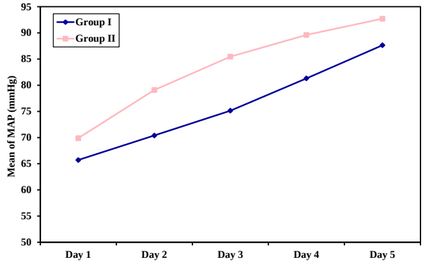

Figure 1: Comparison Between Both Groups Regarding Map

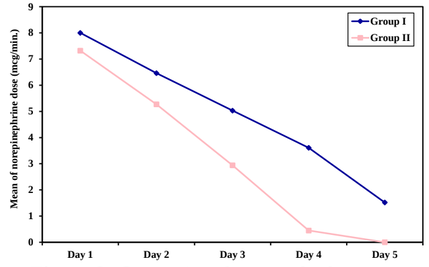

Figure 2: Comparison between both groups regarding norepinephrine dose

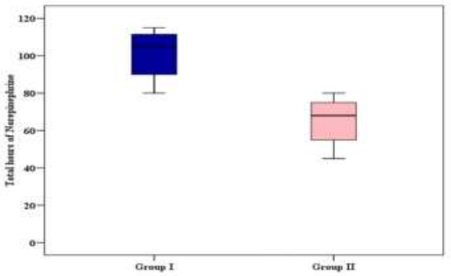

Figure 3: Comparison between both groups regarding total hours of norepinephrine

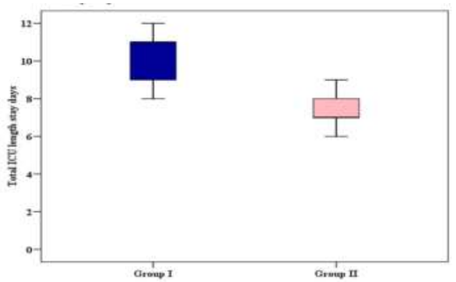

Figure 4: Comparison between both groups regardingtotal ICU length stay

CONCLUSION

Midodrine is an effective and safe adjunctive therapy in septic shock, to allow early liberation of IV vasopressors and allow earlier discharge from ICU.Midodrine usage had significant impact on total hours of norepinephrine and ICU length of stay but had no significant impact on the 28 days mortality rate.