Endotoxin removal therapy with Polymyxin B Immobilized Fiber Column: A single center experience

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Introduction:Similarly to the source control, microbiological cultures and antibiotics administration,EAA evaluation at regular intervals, and the targeted use of PMX-HP could be lifesaving and adequate within the golden hour for the diagnosis and treatment of endotoxic shock.The aim of this study was to assess the role of diagnostic-therapeutic flowchart, applied from 2019 in our center, for the use of endotoxin neutralization by PMX-HP.Methods:We conducted an analysis of a single center prospective, observational web-based database (EUPHAS2 registry) of critically ill patients admitted to the ICU between January2016 until to May2021 who were affected by endotoxic shock caused by proved or suspected infection related to Gram negative bacteria and received PMX-HP as per clinical indication of the attending physician.Patients were divided based on the use of diagnostic-therapeutic flowchart focused on identification and timing of endotoxic shock in two groups: Pre-Flowchart (Pre-F) and Post-Flowchart (Post-F).Results:61 patients,27 in Pre-F and 34 in Post-F,were treated with PMX-HP out of 531 patients with diagnosis with septic shock.The most common source of infection was secondary peritonitis (36%) followed by community acquired pneumonia (29%). We identified gram negative bacteria in most of the microbiological culture (N=59,51%), followed by gram positive bacteria in (N=31,27%), fungi(N=11,9%) and no growth (N= 15,13%). In both groups,SOFA score progressively improved over the next 120 hours following PMX-HP and it was associated with endotoxin activity assay (EAA) decrease.In the Post-F group EAA decreased from 0.71 [0.64-0.80] at T0 to 0.56 [0.45-0.66] at T120.Particularly, in Post-F group were observed a lower 28-day mortality [21%], ICU [29%] and lower 90-day mortality[29%].Conversely, in the Pre-F group were observed a sightly higher 28-day mortality [30%],ICU[52%] and higher 90-day mortality[52%].Conclusion:In critically ill patients with endotoxic shock,PMX-HP was associated with organ function recovery,hemodynamic improvement and contemporary EAA level reduction.

Characteristics	Flowchart	
	Pre N = 27[1]	Post N = 34[1]
Age	23 (16, 30)	18 (12, 25)
Sex (Male:Female)	(19:8)	(23:11)
BMI (kg/m2)	24.3 (22.7, 27.8)	25.8 (24.0, 29.2)
Type of Admission		
Medical Department	3 (11%)	15 (44%)
Emergency Department	11 (41%)	9 (26%)
Elective Surgical Department	6 (22%)	3 (8.8%)
Emergency Surgical Department	6 (22%)	7 (21%)
Other ICU	1 (3.7%)	0 (0%)
Surgery Before Admission		
None	10 (37%)	18 (53%)
Abdominal	10 (37%)	12 (35%)
Neurological	3 (11%)	0 (0%)
Thoracic	1 (3.7%)	4 (12%)
Vascular	1 (3.7%)	0 (0%)
Other surgery	2 (7.4%)	0 (0%)
Type of Suspected/Proven Infection		
Wound infection	3 (11%)	3 (8.8%)
Primary peritonitis	2 (7.4%)	6 (18%)
Secondary peritonitis	13 (48%)	9 (26%)
Community acquired pneumonia	5 (19%)	13 (38%)
Surgical urinary tract infection	2 (7.4%)	2 (5.9%)
VAP	2 (7.4%)	1 (2.9%)
Main Pathology		
None other than infection	9 (33%)	18 (53%)
ALI/ARDS	3 (11%)	3 (8.8%)
Atrial fibrillation	1 (3.7%)	1 (2.9%)
Cholecystitis	4 (15%)	0 (0%)
Colitis	1 (3.7%)	1 (2.9%)
Colon cancer	0 (0%)	1 (2.9%)
Intrabdominal abscess	1 (3.7%)	1 (2.9%)
Intrabdominal perforation	5 (19%)	4 (12%)
Intestinal occlusion	0 (0%)	3 (8.8%)
Ischemic Cardiopathy	2 (7.4%)	1 (2.9%)
Pancreatitis	1 (3.7%)	0 (0%)
Trauma	0 (0%)	1 (2.9%)
Arrhythmia	4 (15%)	2 (5.9%)
Cancer	3 (11%)	4 (12%)
Diabetes	6 (22%)	5 (15%)
Hypertension	12 (44%)	17 (50%)
Hematologic malignancy	5 (19%)	3 (8.8%)
Obesity	1 (3.7%)	3 (8.8%)
Severe COPD	1 (3.7%)	0 (0%)
No Comorbidities	21 (78%)	23 (68%)

[1]Median (IQR); n (%)