Prevalence and Risk Factors of Post-intensive Care Syndrome Among Patients in Alexandria Main University Hospital

Amr Abdallah El-Morsy, Mohamed Abd El Alim Abd Elhady, Mohammed Raafat Elsalamouny, Mahmoud Mohamed Mahmoud Ibrahim Elshal
Department of Critical Care Medicine, Faculty of Medicine, Alexandria University

Introduction

Post-intensive care syndrome is the term used to characterize the residual disability following a critical illness. This includes cognitive, psychological, and physical functioning deficits in the intensive care unit survivor. As a result, the survivor's family members' psychological well-being may be negatively impacted; this is known as PICS-Family. PICS is characterized as new or worsening impairment resulting from a critical illness that persists beyond discharge from the acute care setting in the physical (ICU-acquired neuromuscular weakness), cognitive (thinking & judgement), or mental health state. PICS symptoms can appear in critically sick studied cases at any moment; they might appear as early as forty-eight hours after ICU admission, be concealed by sedation throughout the ICU stay, or even appear later throughout in-patient rehabilitation or after the studied case has been released home. Furthermore, distinct symptoms may appear concurrently or at different stages of the life-threatening condition. Rehabilitation guidelines for PICS prevention recommend the use of ergometers (bed cycling and Wheelchair cycle) in addition to the standard physical therapy to improve muscle strength and cardiovascular fitness and Electrical stimulation of the ventral thigh musculature can be used to strengthen the muscles.

Aim of the work

Estimate prevalence of post intensive care syndrome between patients in Alexandria main university hospital. Identify risk factors leading to post intensive care syndrome.

Patients and Methods

This is an observational prospective cohort research had been carried out in Alexandria Main University Hospital on 80 critically ill studied cases of both genders admitted to intensive care units according to the sample size study. **The following data were collected from every patient after enrollment into the study:(A)** Sociodemographic factors (age, sex, past medical, surgical history and drug history).**(B)**Possible risk factors for PICS such as:Medication used (antibiotics, steroids, opioid analgesia, vasopressors, diuretics, inotropic, vasopressors, antihypertensive and blood transfusion)Comorbidities (immobility, delirium, bed sore, hemodialysis, sepsis and shock state) Lab abnormalities (leukocytosis, anemia, elevated urea/creatinine, elevated SGPT/SGOT, abnormalities in the sodium, potassium, calcium and random blood sugar) Invasive procedures (central venous catheter, nasogastric /orogastric tube & urinary catheter) Number of days in the intensive care unit Number of mechanical ventilation days. Within one week after ICU discharge, PICS questionnaire by DONG A University in Korea, was presented to the patient (APPENDIX I).[19] It is an 18-item questionnaire to assess the three domains of PICS (Item No. 1~6 = Cognitive, 7~12 = Physical, 13~18 = Mental), With a 4-point scale (0 = Never, 1 = Sometimes, 2 = Most often, 3 = Always). A high score means a severe degree of post-intensive care syndrome.

Results

Table (1): Relation between Total PICS score and Sociodemographic factors and history for total sample (n = 80)

	N	Total PICS score			Test of Sig.	p
		Min. – Max.	Mean ± SD.	Median		
Sex						
Male	43	5.0 – 42.0	24.65 ± 10.27	23.0	t= 0.637	0.526
Female	37	11.0 – 40.0	26.08 ± 9.68	28.0		
Past medical history						
No	17	5.0 – 22.0	16.41 ± 4.51	16.0	t= 6.894*	<0.001*
Yes	63	7.0 – 42.0	27.71 ± 9.68	32.0		
Non-Diabetes mellitus	36	5.0 – 42.0	19.69 ± 8.78	18.0	t= 5.278*	<0.001*
Diabetes mellitus	44	8.0 – 40.0	29.91 ± 8.47	32.50		
Non Hypertension	32	5.0 – 38.0	20.25 ± 8.58	18.50	t= 4.055*	<0.001*
Hypertension	48	7.0 – 42.0	28.69 ± 9.46	32.0		
Non-Liver cirrhosis	68	5.0 – 42.0	24.35 ± 9.56	23.0	t= 2.093*	0.040*
Liver cirrhosis	12	8.0 – 40.0	30.75 ± 10.91	34.50		
Non-Chronic kidney disease	56	5.0 – 36.0	21.25 ± 8.47	20.0	t= 8.135*	<0.001*
Chronic kidney disease	24	10.0 – 42.0	34.79 ± 5.98	35.50		
Non ischemic heart disease/ Heart failure	61	5.0 – 42.0	23.03 ± 9.20	22.0	t= 3.997*	<0.001*
Ischemic heart disease/ Heart failure	19	7.0 – 40.0	32.63 ± 8.95	35.0		
Chronic obstructive lung disease	4	12.0 – 32.0	18.50 ± 9.15	15.0	F= 1.713	0.187
Bronchial asthma	1		17.0			
Atrial fibrillation	3	22.0 – 38.0	32.33 ± 8.96	37.0		
Past surgical history						
No	74	5.0 – 42.0	25.24 ± 10.06	27.0	t= 0.217	0.829
Yes	6	11.0 – 35.0	26.17 ± 9.54	27.0		
Drug history						
No	14	5.0 – 22.0	16.93 ± 4.78	18.0	t= 5.759*	<0.001*
Yes	66	7.0 – 42.0	27.09 ± 9.89	32.0		

There were statistically significant relations among total PICS score & Diabetes mellitus (p < 0.001), hypertension (p < 0.001), chronic kidney disease (p < 0.001), ischemic heart disease (p< 0.001), liver cirrhosis patients (p < 0.040) & drug history (p< 0.001). (Table 1, Figure 1)

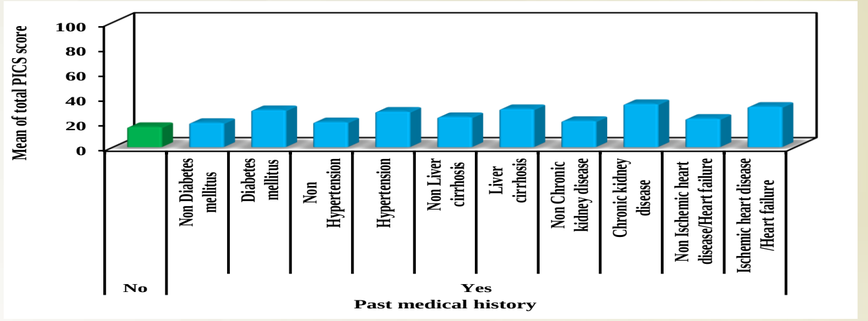

Figure (1):Relation between total PICS score and past medical history for total sample (n = 80)

Table(2): Correlation between Total PICS score and age, number of days in the ICU and mechanical ventilation days (n=80)

	Total PICS score	
	r	p
Age (years)	–0.034	0.763
Number of days in the intensive care unit	0.607*	<0.001*
Number of mechanical ventilation (days)	0.659*	<0.001*

There was no correlation between total PICS score and age. While there was significant positive correlation between total PICS score and number of days in the ICU and number of mechanical ventilation days (P value<0.001). (table2)

Conclusion

A relatively high prevalence of PICS in the post-ICU population. Mental impairment in the present study represented the highest score compared with cognitive and physical scores. The overall PICS score was statistically significantly correlated with medication history, diabetes mellitus, hypertension, ischaemic heart disease, chronic renal disease, & liver cirrhosis studied cases. There was a statistically significant association among total PICS score & the use of vasopressors, diuretics, inotropics, anti-hypertensives, opioid analgesia, sedative infusions and in patients who took meropenem, vancomycin and linezolid.