e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2024; 16(3); 223-228

Original Research Article

Post-Traumatic Stress Disorder in Patients Admitted in Medical Intensive Care Unit: A Prospective Study

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Received: 25-12-2023 / Revised: 23-01-2023 / Accepted: 26-02-2024
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Conflict of interest: Nil

Abstract:

Introduction: Post-Traumatic stress disorder in patients admitted in Medical Intensive Care UNIT-A Prospective study. One-fifth of critical illness survivors have clinically relevant PTSD symptoms in the year after intensive care.

Methodology: All consecutive patients admitted to the Medical Intensive Care Unit(MICU) in Christian Medical College Vellore, during the study period march 2010 to October 2010, between 18 to 65 years who had completed minimum 24 hours on mechanical ventilation, were included in the study. Patients too ill to give consent and with memory impairment and in delirium were excluded. Patients were interviewed at time points, first 4-14 days after extubation form mechanical ventilation and second 2 months after discharge from hospital. The interview at 2 months was on telephone. The UK -Post traumatic stress syndrome (PTSS) 14-question inventory was used to assess PTSD. 140 were able to be taken for study and 92 patients followed up the at 2 months.

Results: The prevalence of PTSD at baseline is 32.8% and at 2 months is 23.9%. The Fisher Exact test is significant. Past history of Psychiatric illness and diagnosis of poisoning were associated with development of PTSD. The Patients who had PTSD at baseline continued to have symptoms at two months and patients who had PTSD at baseline continued to improve.

Discussion: The prevalence of PTSD is patients who were discharged from Medical intensive care is high. Early recognition and treatment will reduce the morbidity.

Keywords: PTSD, Medical ICU, Stress.

Introduction

Treatment in Intensive care unit is seen as traumatic stressor [1] . Patients recovering from critical illness have been shown to be at risk of developing Post Traumatic Stress disorder (PTSD). One-fifth of critical illness survivors have clinically relevant PTSD symptoms in the year after intensive care, and markers of risk include prior psychiatric illness, benzodiazepine administration in the intensive care unit (ICU) [2,3].

Post-traumatic stress disorder develops following exposure (either witnessing or experiencing) trauma [4]. It is Characterized by cluster of symptoms of anxiety, Recurrent and intrusive distressing recollections of the event and physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.[5,6]

Patients admitted in ICU setting have a life-threatening condition [7]. Critical illness is uniquely stressful due to factors associated with ICU experience such as loss of awareness during painful procedures, a sense of helplessness, loss of control and imminent threat of death. There is increasing interest in the psychological wellbeing in ICU(Intensive Care Unit) patients during and after discharge from ICU. PTSD is associated serious health consequences that lead to poor quality of life and increased use of health services. PTSD has been studied to occur in patients who had myocardial infarction [8] and cancer.[9]

A systematic review by Jackson et al have shown prevalence of PTSD 5-63% from 16 studies [10,11].There is one study by Nagarajan et al which found 16% prevalence of PTSD in critical ill covid 19 patients.[12]Indian studies on PTSD have focused on Asian Tsunami, PTSD secondary to violence in Kashmir, Super cyclone in Odisha ,riots in Gujarat.[13,14,15]. Validity and coping in PTSD has been studied in indian population [16,17,18].

However data of PTSD following Medical Intensive care unit (MICU) admission from India is lacking.

In this study we want to estimate the prevalence and risk factors associated with development of PTSD among patients admitted in MICU

Methodology

All consecutive patients admitted to the Medical Intensive Care Unit (MICU) in Christian Medical College Vellore, during the study period march 2010 to October 2010, between 18 to 65 years who had completed minimum 24 hours on mechanical ventilation, were included in the study.

Patients too ill to give consent and with memory impairment aind in delirium were excluded. Patients were interviewed at time points, first 4-14days after extubation form mechanical ventilation and second 2 months after discharge from hospital.

The interview at 2 months was on telephone.

The UK -Post traumatic stress syndrome (PTSS) 14-question inventory was used to assess PTSD [19]. It is an extension of PTSS-10. The Threshold score for diagnosis of Post-traumatic stress syndrome at initial interview is 35 and at 2 month interview was 45.

The primary outcome measures were the prevalence of PTSD in MICU patients post mechanical ventilation in MICU in a tertiary care hospital. The Secondary outcome measures were to find out the risk factors associated with development of PTSD.

The sample size was calculated according to N=4pq/d2 and data was analysed using STATA v 11 and SPSS 16.The study was conducted in Medical Intensive care Unit (MICU) of Christian Medical College Vellore, in the year 2009. It is a prospective cohort study. Informed consent was obtained from patients. A total of 513 were admitted to MICU in the study period. 199 qualified the inclusion criteria of which 140 were able to be taken for study. Of the 140 patients 92 patients followed up the at 2months.

Inclusion Criteria

4 to 14 days following of mechanical ventilation.

Posttraumatic Stress Scale (PTSS) was applied to the participants.

The primary outcome measures were the prevalence of PTSD in MICU patients post mechanical ventilation in MICU in a tertiary care hospital. The Secondary outcome measures were to find out the risk factors associated with development of PTSD

Results

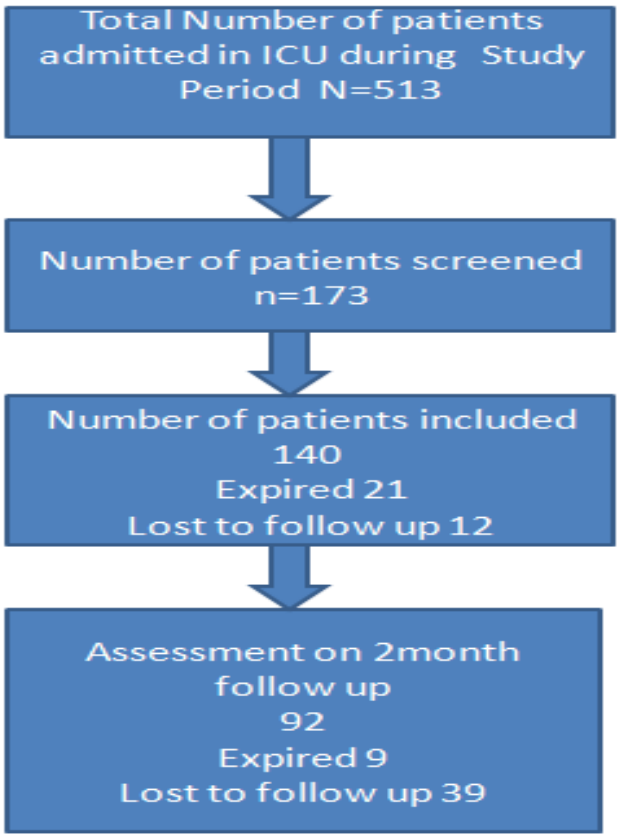

Figure 1

Table 1: Discrete demographic and clinical variables at baseline

Parameter at Baseline	PTSD Present (n=42) n (%)	PTSD Absent	p- value
Male- 100(71.4%) Female -40 (28.6%)	34 (34%) 12 (30%)	66 (66.0%) 28 (70%)	0.69 0.83
Married: 106(75.0%) Single: 33 (25%)	37(37.5%) 9 (26.5 %)	69(65.1%) 25 (73.5%)	0.40 0.67
Unemployed: 38(58.5%) Employed: 27(41.6%)	16 (43.2%) 14 (51.9%)	21 (56.8%) 14 (51.9%)	0.69 0.82
Low SES: 79(56.4%) MiddleSES: 61(43.6%)	30(38%) 16(26.2%)	49(62%) 45(73.8%)	0.15 0.58
P/H of Psychiatric illness No Yes	 26(25.7%) 20(51.3%)	 75(74.3%) 19(48.7%)	 0.04* 3.03
Medical Diagnosis Poisoning:46(32.9%) Other Diagnosis: 96(67.1%)	 25(54.7%) 21(22.3%)	 21(45.7%) 73(77.7%)	 0.000** 0.24
Continuous variables at baseline			
Age	46 (32.85%)	94 (67.14%)	0.66
APACHE II (n=86)	22 (25.5%)	64 (74.50%)	0.14
GCS	46 (32.85%)	94 (67.14%)	0.51
Duration of intubation	46 (32.85%)	94 (67.14%)	0.51
Cotisol Level n(=80)	33 (41.25%)	47 (58.75%)	0.42

*p<0.05 **p<0.001

Table 2: Discrete demographic and clinical variables at 2months

Parameter at Baseline	PTSD Present	PTSD Absent	p- value
Male- 56(71.4) Female -36 (28.6)	16 (72.33%) 6 (27.77%)	40(57.14) 30(42.8)	0.40 0.82
Married: 21(22.82%) Single: 71 (77.17%)	6(28.57%) 16 (22.53%)	15(71.42%) 55 (77.46%)	0.40 0.67
Unemployment: 44(58.5%) Employed: 38(41.6%)	16 (43.2%) 14 (51.9%)	21 (56.8%) 14 (51.9%)	0.69 0.82
Low SES: 49(53.26%) MiddleSES: 43(46.73%)	15(30.61%) 07(16.27%)	34(69.38%) 36(83.72%)	0.14
P/H of Psychiatric illness No Yes	 11(17.18%) 11(17.18%)	 53(82.81%) 17(60.71%)	 0.02
Medical Diagnosis Poisoning: 46(32.9%) Other Diagnosis: 96(67.1%)	 16(44.44%) 06(10.71%)	 20(55.55%) 50(89.28%)	 0.00
Continuous variables at baseline at 2month			
Age	22(23.9%)	70 (76.1%)	0.035
APACHE II (n=86)	11 (20.75%)	42 (79.24%)	0.86
GCS	22 (23.9%)	70 (76.1%)	0.48
Duration of intubation	22 (23.9%)	70 (76.1%)	0.37
Cortisol Level n(=80)	16 (30.76%)	36 (69.23%)	0.64

Table 3: Comparison between variables of Part-A of PTSS scale - initial and 2month follow-up

Variable	Present	Absent	P Value
Nightmare	87	145	0.008
Severe anxiety or panic	69	163	0.000
Severe pain	31	201	0.013
Trouble Breath/ feeling Of suffocation	27	205	0.005

Table 4: PTSS Part B Score at baseline and at 2months

Who had PTSD n=22	Mean	Std. Deviation	P
At initial assessment	41.36	3.66	
At 2 months	52.36	1.33	0.009
Who did not have PTSD n=70	Mean	Std. Deviation	
At initial assessment	29.58	16.51	0.000
At 2 months	17.72	7.07	

Table 5: Prevalence of PTSD at Baseline and at 2 months

	Baseline assessment PTSD present	Baseline assessment PTSD absent
Follow up assessment PTSD present	13	9
Follow up assessment PTSD Absent	21	49

PTSD at Baseline 46/140=32.85%, At 2 months 22/92=23.91%, Significant FET

Discussion

A prospective Cohort study was conducted to know the prevalence and risk factors associated with development of PTSD.

The prevalence of PTSD 4 to 14 days (mean 7 days) is 32.8% and at 2 months is 23.9% in our study. The prevalence in a study by twigg et al is 12% is using a standardized interview at 3 months.

The prevalence rates of PTSD following ICU admission can be upto 5 to 63%[13,14]

A Significant finding in our study shows that patients who had PTSD at first interview showed statistically significant worsening at 2 months. And patients who were not having symptoms of PTSD continued to improve in the scores at the end of 2 months.

Demographic factors and PTSD

Gender and Age : The Male to female ratio of study population was 2.5:1 We did not observe any gender preponderance for PTSD(p=0.69). In a study by Girad et al female gender was more prone for PTSD [20,21].The sample is sked with ,this is explained by more men being admitted to icu more than women with critical illness.

The mean age of people developed PTsd was 37.2 and people who develop PTSD was 38.3 years (p=0.6). In a study by cuthberson, young ware found more prone to ptsd [20,21].

Mean age 32.09 years were more at risk of developing PTSD (p=0.03) assessment at 2 months.

Marital status, occupation and socio-economic status did not show any significant association as is consistent with other studies [20,21,22].

Medical Profile & PTSD

In our study the majority of subjects were admitted with diagnosis of poisoning 32.6% (n=46) and infection 34% .Patients admitted with poisoning were at the greater risk of developing PTSD. A statistically significant association was observed between poisoning and PTSD at 1 week following extubation (OR 3.03, 95% CI 1.4-6.56, p=0.04)

Presence of past psychiatric history and past of deliberate self-harm and current suicide attempt could be confounders for the current ptsd.

This finding is unique since none of the cohorts from high income countries have looked at organophosphorus poisoning as a predictor of PTSD. While trauma in the community is studied [23,24,26]. In our study the severity of the illness as rated APACHE II score did not co-relate with occurance of PTSD. This is in accordance with other studies by Girad et al and Day dow et al [21,22].

Duration of mechanical ventilation did not co-relate with occurrence of PTSD.

Bio-Chemical Profile: Cortisol level was assessed in 80 of the 140 patients at the initial assessment. Cortisol level was not associated with the occurrence of PTSD symptoms [28].

Past history of Psychiatric illness

39 (27.7%) patients had past history of psychiatric illness. 20 patients of the 39 developed PTSD. The patients with past history of psychiatric illness were at risk of developing PTSD (OR 3.03,95% CI 1.4-6.56, p=0.04)

This finding is similar in other studies and meta-analysis.

Prevalence of PTSD at two months 28.6% (n=38)of subjects were lost to follow-up, 9.4% (n=9) expired 62% percent of the initial sample were interviewed. Our attrition rate was similar to other studies (Jackson et al) where the average loss to follow-up was more than 30% in 16 studies.

The prevalence of PTSD at 2 months is 24%. In another study the prevalence at 3months is 14% (Cuthbertson and eddilesson et al reported distressing flashback at 6 months.

Screening tool and PTSD symptoms profile:

In our study symptoms from PTSS14 part A showed Nightmares (44.28) anxiety (39.28) pain 17.8% and breathing difficulty (16.4%).

At 2 months follow-up there was a reduction in all symptoms. Of the four symptoms nightmares and anxiety were statistically significant in predicting development of PTSD.

The mean of PTSS14 part B scale items of the cohort who continued to have ptsd was 41.36 at the initial assessment and at two month follow-up the mean oe this group of patients who had persistence of symptoms increased to 52.36. On comparing the mean scores at the initial and follow-up assessment there was a statistically significant increase (p=0.009) in those who developed PTSD.

The mean of PTSS 14 Part B Scale items who did not have PTSD n=70 was 29.58 at the initial assessment and at two months there was a further reduction in score to 17.72. This reduction was also statistically significant. (p=0.000).

Strengths and Limitations

1. The study was completed in time period proposed and adequate sample size was achieved as calculated prior to the start of the study.
2. This study is the first of its kind in the Indian population and gives an incidence of PTSD symptoms in the ICU setting in a tertiary care hospital from southern India.
3. The study included a heterogeneous population in terms of age, socioeconomic status, medical and psychiatric diagnosis and thus is probably generalizable to other ICUs in India.

Limitations

1. The Gold standard measure to diagnose PTSD is through a structured clinical interview. The current study used a validated scale PTSS 14 Intensive care screen which is based on DSM IV to diagnose PTSD. However, use of a rating scale to diagnose PTSD may give a higher incidence than what we have observed.

2. The initial assessment of PTSD was carried out in the 4-14 days duration. The symptoms manifested during this time frame can be more appropriately called as acute stress disorder symptoms under the current classification system.

3. The follow-up interview after 2-months was conducted over the phone. This may have introduced an objective scoring of a subjective PTSS 14 scale.

4. The secondary outcome variables measures (serum cortisol, APACHE II) were not evaluated for all the patients. This had not been possible because of inability to balance research work and clinical obligations.

5. Although we initially proposed to include both Level III b (complex ICU patients with multiple organ dysfunction) and Level III a (patients with 2 or less than 2 organ dysfunction) ICU patients, the study was restricted to the study of the latter due to logistic reasons.

Conclusion

An ambitious research agenda might be to develop prospective cohort design studies to see the distressing symptoms post ICU discharge and follow their natural course.

Early intervention with psychiatrist referral may help decrease morbidity in this subset of patients.

References

1. Ozer, E.J. et al., Predictors of posttraumatic stress disorder and symptoms in adults: a meta-analysis. Psychological Bulletin, 2003; 129(1): 52-73.
2. Brewin, C.R., Andrews, B. & Valentine, J.D., Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. Journal of Consulting and Clinical Psychology, 2000; 68(5): 748-766.
3. Girard, T.D. et al., Risk factors for post-traumatic stress disorder symptoms following critical illness requiring mechanical ventilation: a prospective cohort study. Critical Care (London, England), 2007;11(1): R28.
4. Mezey, G. & Robbins, I., Usefulness and validity of post-traumatic stress disorder as a psychiatric category. BMJ (Clinical Research Ed.), 2001; 323(7312): 561-563.
5. 1994. Diagnostic and Statistical Manual of Mental Disorders 4th ed., Washington, D.C: American Psychiatric Association;
6. 1980. Diagnostic and Statistical Manual of Mental Disorders. 3rd ed., Washington, DC: A merican Psychiatric Association.
7. Breslau, N. & Kessler, R.C., The stressor criterion in DSM-IV posttraumatic stress disorder: an empirical investigation. Biological Psychiatry, 2001;50(9): 699-704.
8. Shemesh, E. et al., Symptoms of posttraumatic stress disorder in patients who have had a myocardial infarction. Psychosomatics, 2006; 47(3): 231-239.
9. Smith, M.Y. et al., post-traumatic stress disorder in cancer: a review. Psycho-Oncology, 1999; 8(6): 521-537.
10. Jackson, J.C. et al., post-traumatic stress disorder and post-traumatic stress symptoms following critical illness in medical intensive care unit patients: assessing the magnitude of the problem. Critical Care (London, England), 2007; 11(1): R27.
11. Wittchen, H. et al., posttraumatic stress disorder: diagnostic and epidemiological perspectives. CNS Spectrums, 14(1 Suppl 1), 2009; 5-12.
12. Ramya Nagarajan et. al. Prevalence of post-traumatic stress disorder among survivors of severe COVID-19 infections: A systematic review and meta-analysis J Affect Disord. 2022 Feb 15:299:52-59.
13. John, P.B., Russell, S. & Russell, P.S.S., The prevalence of posttraumatic stress disorder among children and adolescents affected by tsunami disaster in Tamil Nadu. Disaster Management & Response: DMR: An Official Publication of the Emergency Nurses Association, 2007; 5(1): 3-7.
14. Kar, N. et al., Post-traumatic stress disorder in children and adolescents one year after a su-

per-cyclone in Orissa, India: exploring cross-cultural validity and vulnerability factors. BMC Psychiatry, 2007; 7:8.
15. Kumar, M.S. et al., Prevalence of Posttraumatic Stress Disorder in a Coastal Fishing Village in Tamil Nadu, India, After the December 2004 Tsunami. American Journal of Public Health, 2007;97(1): 99-101.
16. Rajkumar, A.P., Premkumar, T.S. & Tharyan, P., 2008. Coping with the Asian tsunami: perspectives from Tamil Nadu, India on the determinants of resilience in the face of adversity. Social Science & Medicine. 1982; 67(5): 844-853.
17. Margoob MA, Zaid A., Arshad A., A., Recognition of chronic PTSD in our set up—experience from Kashmir. 2003.
18. Mehta, K., Vankar, G. & Patel, V., Validity of the construct of post-traumatic stress disorder in a low-income country: interview study of women in Gujarat, India. The British Journal of Psychiatry: The Journal of Mental Science, 2005; 187: 585-586.
19. Twigg, E. et al., Use of a screening questionnaire for post-traumatic stress disorder (PTSD) on a sample of UK ICU patients. Acta Anaesthesiologica Scandinavica, 2008; 52(2): 202-208.
20. Cuthbertson, B.H. et al., 2004. Post-traumatic stress disorder after critical illness requiring general intensive care. Intensive Care Medicine, 30(3), 450-455.
21. Davydow, D.S., Gifford, J.M., Desai, S.V., Needham, D.M. & Bienvenu, O.J., Posttraumatic stress disorder in general intensive care unit survivors: a systematic review. General Hospital Psychiatry, 2008;30(5): 421-434.
22. Griffiths, J. et al., The prevalence of posttraumatic stress disorder in survivors of ICU treatment: a systematic review. Intensive Care Medicine, 2007;33(9): 1506-1518.
23. Breslau, N. et al., Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. Archives of General Psychiatry, 1998;55(7): 626-632.
24. Kessler, R.C. et al., Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. Archives of General Psychiatry, 2005; 62(6): 617-627.
25. Nickel, M. et al., The occurrence of posttraumatic stress disorder in patients following intensive care treatment: a cross-sectional study in a random sample. Journal of Intensive Care Medicine, 2004;19(5): 285-290.
26. Perkonigg, A. et al., Traumatic events and post-traumatic stress disorder in the community: prevalence, risk factors and comorbidity. Acta Psychiatrica Scandinavica, 2000; 101(1): 46-59.
27. Perkonigg, A. et al., Longitudinal course of posttraumatic stress disorder and posttraumatic stress disorder symptoms in a community sample of adolescents and young adults. The American Journal of Psychiatry, 2005;162(7): 1320-1327.
28. Schelling, G. et al., The effect of stress doses of hydrocortisone during septic shock on posttraumatic stress disorder and health-related quality of life in survivors. Critical Care Medicine, 1999; 27(12): 2678-2683.