

Commentary

Long-term sequelae of critical illness: memories and health-related quality of life

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Abstract

Impaired health-related quality of life after critical illness has been demonstrated in a number of studies. It is not clear exactly how or why critical illness and intensive care lead to impaired health status, but understanding this association is an important step to improving long-term outcomes of the critically ill. There is growing evidence that neuro-psychological symptoms play a significant role in this impairment and that management of patients in the intensive care unit (ICU) may influence these symptoms. This commentary examines a recent study and places this study in the context of previous studies suggesting that both amnesia and persisting nightmares of the ICU experience are associated with impaired quality of life. Further research is needed if we are effectively to understand, prevent and treat the negative sequelae of critical illness.

In their large, multicenter follow-up study of survivors of critical illness, Granja and colleagues [1] asked the question, 'Are memories of the intensive care experience associated with long-term health related quality of life?' The study adds to the growing body of literature that addresses long-term outcomes after critical illness, and specifically the effect of critical illness on long-term health-related quality of life.

That health-related quality of life is impaired after critical illness has been demonstrated in a number of studies over the past decade [2–5]. It is still not clear exactly how or why critical illness and intensive care lead to impaired health status. For example, studies of patients with acute lung injury (ALI) show that most survivors have impaired quality of life, despite rapid resolution in lung function in the majority of survivors [2]. This observation led to detailed follow-up studies of ALI survivors that looked for other contributors to impaired health status apart from pulmonary function. These innovative studies showed that ALI survivors suffered from a

number of problems that impair quality of life, including muscle weakness [5], cognitive impairments [6], sleep difficulties [7], and symptoms of post-traumatic stress disorder (PTSD) [8]. Furthermore, one study [3] suggested that health-related quality of life is worse in survivors of ALI than among critically ill patients with similar severity of illness on admission but who did not develop ALI. This body of literature suggests that critical care clinicians and researchers need to understand and work to minimize the long-term effects of critical illness on the quality of their patients' lives.

Recognizing that critical illness can be a traumatic event, Schelling and colleagues [8] tested the hypothesis that survivors of ALI had an increased rate of symptoms of post-traumatic stress. Using the previously validated PTSS-10 (Post-Traumatic Stress Syndrome 10-Question Inventory), they found that more ALI survivors had evidence of post-traumatic stress than did hospital control individuals and United Nations soldiers. Post-traumatic stress was associated with impaired health-related quality of life, and was highly correlated with the individuals' recollections of traumatic events from the intensive care unit (ICU). The authors concluded that, 'impairments in psychosocial function, including PTSD, occur in a subgroup of patients reporting adverse experiences during intensive care.' The results of that study could lead one to hypothesize that memories of the ICU are detrimental and that critically ill patients would benefit from amnesia during their ICU stay. However, the fascinating study conducted by Jones and colleagues [9] found that, although delusional memories of intensive care were associated with symptoms of PTSD, factual memories appeared to be protective. This study

suggests that factual memories may allow ICU survivors to reject delusional memories and thereby decrease the symptoms of post-traumatic stress. However, it remains unclear how to reduce delusional memories and increase recollection of factual experiences.

Memory formation in the ICU is affected by many things. Disease-specific factors, such as the presence of septic encephalopathy or delirium, probably decrease factual recall while promoting delusional memories. Critical illness itself also can prevent normal sleep, which is crucial in the formation of factual memories. Patient-specific factors, such as age and pre-existing anxiety, can also affect the type and quality of memories and their sequelae [9,10]. In addition, factors associated with care in the ICU, such as the use of sedative and analgesic medications, have profound effects on memories, delusions, and confusion [9].

We are not aware of any studies investigating the effects of specific sedation protocols on memories after ICU discharge. In a small retrospective study, Nelson and colleagues [11] looked at the relationship between days and intensity of sedation use in patients with ALI and subsequent PTSD and depression. They found that duration of sedation was associated with an increase in the post-traumatic stress symptom score and an increase in depressive symptoms. These findings are interesting but not conclusive because the study design could not account for potential confounding by severity of illness. A randomized controlled trial of sedation protocols with patient follow up and assessment of memories, PTSD, and health-related quality of life would be a more robust design with which to address this question.

In a follow-up study of individuals enrolled in a randomized controlled trial of daily sedative interruption, Kress and colleagues [12] looked at the influence of sedation protocol on the long-term psychological outcomes of study survivors [13]. Although this is the optimal study design, the investigators were limited by small numbers of subjects (18 patients from the original study, and 14 additional 'contemporaneous' patients who were not enrolled in the study). Although memories from the ICU were not assessed, the investigators found that no individual managed with daily sedation interruption developed PTSD, as compared with 32% of those managed without sedation interruption ($P=0.06$). There was no difference in health-related quality of life, as assessed using the MOS SF-36 (Medical Outcomes Study Short Form-36), between study groups. Again, these findings are not conclusive but they suggest that symptoms of PTSD can be reduced by using a protocol to limit sedation.

The study by Granja and associates [1] demonstrates that ICU memories and health-related quality of life can be assessed in large numbers of ICU survivors. Confirming previous findings by Schelling [8] and Jones [9] and their

groups, the study shows that amnesia and persisting nightmares of the ICU experience are associated with impaired quality of life. It is becoming clear that neuropsychological consequences of critical illness contribute to the impaired quality of life of many survivors. Future research, particularly interventional trials, is required if we are effectively to understand, prevent, and treat the negative sequelae of critical illness.

Competing interests

The author(s) declare that they have no competing interests.

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