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CASE REPORT

Surgical intensive care unit (ICU) delirium: A "psychosomatic" problem?

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ABSTRACT

Objective: Intensive Care Unit (ICU) delirium is a common complication after major surgery and related among other potential medical precipitants to either pre-existing cognitive impairment or the intensity and length of anesthesiology or the type of surgery. Nevertheless, in some rare situations, an organic etiology is not always found, which can be frustrating for the medical team. Some clinicians working in an intensive care unit have a reluctance to seek another hypothesis in the psychological field.

Method: To illustrate this, we report the case of a 59-year-old woman who developed a massive delirium during her intensive care unit stay after being operated on for a left retroperitoneal sarcoma. Interestingly, she had had no previous cognitive disorders and a somatic explanation for her psychiatric disorder could not been found. Just before the surgery, she was grieving the recent loss of a colleague of the same age, and also a close friend, and therefore had a death anxiety.

Results: With this case report, we would like to point out the importance of psychological factors that might precipitate delirium in a predominately somatic environment such as an intensive care unit.

Significance of results: ICU delirium can sometimes be considered as a "psychosomatic" problem with either a stress response syndrome after surgery or a defense mechanism against death anxiety. Clinicians should be aware of the possibility of such psychological factors even if they always must first rule out potential somatic causes for delirium and encourage thorough investigation and treatment of these medical causes. A collaboration with the psycho-oncologist is recommended to better manage this "psychosomatic" problem.

KEYWORDS: ICU delirium, Surgery, Death anxiety, Psychosomatic

INTRODUCTION

The occurrence of delirium in a surgical intensive care unit (ICU) represents a common complication for medical clinicians. With an average incidence of 36.8% (Dyer et al., 1995), postoperative delirium can affect up to 60 to 85% of intensive care unit patients (Khan et al., 2009), and ~73% of those in surgical ICU (Pandharipande et al., 2008). Paradoxically, this disorder may go unrecognized by hospital staff and caregivers (Rabinowitz, 2002) and even up to 70% of intensive care physicians (Pae et al., 2008).

This is due in part to the clinical nature of delirium with fluctuating levels of consciousness and varied presentation (hypoalert-hypoactive and hyperalert-hyperactive variants). To miss this diagnosis can be quite a problem because delirium is a high predictor of poor outcomes in medical and surgical intensive care units. Therefore it can lead to higher morbidity and mortality rates, longer stays (Ely et al., 2004) and care home placement especially among geriatric patients (Balas et al., 2009; Noimark, 2009). Most of the time, it appears within the first 24–48 hours

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after the surgery but can bee seen after three or four days later and usually disappears in a week (Manos & Wu, 1997). Many predisposing or precipitant factors for delirium in surgical ICUs have been studied and reported in the literature (Aldemir et al., 2001; Van donnalazarus4@hotmail.com et al., 2008). Often one or multiple somatic aetiologies are found and their specific management associated to a symptomatic treatment with antipsychotics agents for agitation or delirious state give a rapidly resolution of delirium within a few days to one week. Of course, regarding the context of invasive surgical procedures, postoperative delirium syndrome can be understood as an interaction of organic and biochemical causes and psychological factors. Nadelson, many years ago, postulated specifiable factors to explain ICU delirium occurrence focusing on specific parameters such as time and surgery (Nadelson, 1976).

Preoperative factors associated with delirium are classically older age, and cognitive impairment or dementia preexisting before surgery. Patients may also experience delirium as part of their underlying medical conditions, especially if they are considered as frail elders and vulnerable.

Perioperative factors associated with delirium depend upon type and complexity of surgical procedure and intensity and length of anesthesiology. Some studies outlined the important role of personality styles or coping mechanisms of the patient and found a correlation with postoperative delirium (Morse & Litin, 1969). Postoperative factors associated with delirium in a predisposed patient are related to the use of drugs and pharmacologic agents (opioïds analgesics, antihistamics, tricyclic antidepressants, or corticosteroïds) (Uldall & Berghuis, 1997) and to the special intensive care unit stressful environment (Granberg et al., 1999).

We describe the case of a patient who developed an ICU delirium two days after an important surgery for sarcoma. What is interesting in this case report is the fact that predisposing factors associated with delirium's development could not be explained by somatic factors. The contributory factors were more likely to be sought among psychological clues.

CASE REPORT

In August 2009, a 59-year-old woman, with no somatic or cognitive dysfunction in her past history, was operated for a left retroperitoneal sarcoma and admitted to our intensive care unit for postoperative follow-up. It was an aggressive tumor with an impact on her weight of a loss of 13 lbs (6 kg) in two months (10% of her basic weight). She had several criteria for severe denutrition (plasma albumin 19 g/L, transthyretin 0.05 g/L). After nutritional support, she had a left nephrectomy and surrenalectomy, oophorectomy, splenectomy, left colectomy and half pancreatectomy. The surgery was done with the patient under general anaesthesia (Propofol, Sufentanyl, Atracurium, Sevoflurane), lasted 5 hours and 41 minutes, without any desaturation episode, and with stable hemodynamic during the complete operation. Blood losses were mild (700 ml) and no blood transfusion was necessary (hemoglobin 9 g/dL at the end of surgery). Awakening of the patient was done in surgical post follow-up ward and a multimodal analgesia was implemented immediately with paracetamol, nefopam and opioids. When the patient arrived into the ICU, she was calm with an SAPS II (Simplified Acute Physiological Score) of 13. Visual Analogue Scales for pain (VAS) were always rated < 30 (0–100) during the first 36 hours.

Forty-eight hours later, she began to develop behavioral disorders that rapidly turned into delirium. She had vivid visual hallucinations with paranoïd ideas and tried many times to get out of her bed and to pull out from her different links: parenteral perfusion, stomia, and Foley catheter. She scored 23 (cutoff score 13) at MDAS (Memorial Delirium Assessment Scale) (Breitbart et al., 1997). Prescription of haloperidol 2.5 mg iv first day then 5 mg iv the following day could not alleviate the symptomatology. An antipsychotic zuclopenthixol ASP (semi prolonged action during 72 hours) 150 mg im was given. Two days later, the patient finally calmed down and MDAS score dropped down to 4. She received a 50 mg zuclopenthixol ASP injection and remained free of delirium ("restitution ad integrum"). During the delirium episode, multiple organic etiology were sought (pain, bladder obstructive symptoms, hypoxemia, hypotension, metabolic disorders, sepsis, pharmacological causes, brain stroke) and ruled out by the paraclinic exams and magnetic resonance imaging. Neither metabolic disorders, meningitides, nor cerebral metastasis were found. Two months ago, she had sustained the loss of one colleague of the same age (59) and also of a close friend, and had developed anxiety and fear of death.

DISCUSSION

Postoperative delirium can be considered a common and frequent complication of invasive surgery. It has been described in various surgery: cardiac surgery with transplantation (Koster et al., 2008; van der Mast et al., 1999), vascular surgery (Schneider et al., 2002), orthopedic surgery (Bruce et al., 2007; Thannhauser et al., 2009), gynecologic surgery (McAlpine et al., 2008), urological surgery and pelvis exenterative surgery (Turns, 2001), head and neck

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surgery (Wang et al., 2004; Yamagata et al., 2005), and abdominal surgery (Olin et al., 2005).

The nosography of this specific intensive care unit (ICU) symptomatology is not so clear and many denominations can be encountered in literature: ICU syndrome (McGuire et al., 2000), ICU psychosis (Gelling, 1999; Justic, 2000) or postoperative delirium (Nadelson, 1976).

The intensive care unit syndrome (ICU syndrome) is characterized by an altered emotional state occurring in a highly stressful environment, which takes various forms such as delirium, confusion, crazy dreams, or unreal experiences (Granberg et al., 1999). Moreover, the clinical presentation of delirium is varied, and delirious patients can have increased or decreased psychomotor activity, impaired attentional and memory systems, disorganized thinking, and/or hallucinations or delusions (Geary, 1994).

Clinicians working in ICU, especially when confronted with postoperative patients, are becoming more aware of this syndrome, with a better comprehension of its underlying physiopathology.

The causes of delirium can be classified as either predisposing or precipitating factors, mainly organic in nature and commonly reversible; but contributory factors also exist to exacerbate delirium (Arend & Christensen, 2009). It is often difficult to pinpoint a specific cause and most of the time, it is a combination of preoperative vulnerability factors, intra-, peri-, and postoperative conditions that can explain the frequency of postoperative delirium (Caraceni & Grassi, 2003). The multiple factors involved in its occurrence can make delirium quite hard to manage.

Classical somatic risks factors for postoperative delirium have been well described through literature studies:

- older age $\geq$70, hypertension, low postoperative O2 saturation, decreased postoperative hemoglobin levels (Wang, 2004)
- respiratory diseases, infections, fever, anemia, hypotension, hypocalcemia, hyponatremia, azotemia, elevated liver enzymes, hyperamylasemia, hyperbilirubinemia, and metabolic acidosis (Aldemir et al., 2001)
- drug combinations and alcohol withdrawal (Chang & Steinberg, 2001).

Postoperative pain after surgery and especially higher pain scores at rest can also be associated with an increased risk of delirium over the first three postoperative days (adjusted risk ratio 1.20, $p = 0.04$) (Lynch et al., 1998). Interestingly, the type of postoperative analgesia (iv, epidural, opioïd analgesics) does not seem to increase delirium occurrence (Fong et al., 2006).

Pre-existing cognitive impairment, greater preoperative functional limitations, history of prior delirium, and stressful environment such as surgical ICU can also be of high value in predicting postoperative delirium (Litaker et al., 2001; Van Rompaey et al., 2008). Environmental risk factors such as isolation, absence of visitors or visible daylight, sleep and sensory deprivation, abrupt transfer from another ward, and/or use of physical restraints may contribute either to launch delirium or to maintain it (Van Rompaey et al., 2009).

Surgical ICU delirium must clearly be differentiated from a brief reactive psychosis episode with persecution ideas. What is called "ICU psychosis" or acute psychotic decompensation is often related either to environmental factors (Gelling, 1999) or medical precipitating factors that in fact should always be avoided by a thorough investigation (Justic, 2000). Reducing the incidence of this syndrome requires recognition of patients at high risk, minimal iatrogenic causes (causative medications), treatment of physiological conditions, and manipulation of environmental factors.

The ICU ward with its stressful factors can be very traumatic for patients, who can react to these stressors by various defense mechanisms such as conservation withdrawal, denial, regression, anger, anxiety, depression, delirium, or even acute stress disorder or post-traumatic stress disorder (Mohta et al., 2003). Some patients perceive the ICU's particular environment as threatening: a high sound level, the absence of normal day-night cycle, sleep and sensory deprivation, the inability for intubated patients to talk, the pain provoked by some medical procedures, the possibility of witnessing other patients' death, separation, poor communication, and immobilization (Gelling, 1999; Ampélas et al., 2002). Delirium occurrence is a major cause of disruption in psychological functioning in ICU patients and one cannot exclude that features intrinsic to the ICU environment can precipitate this psychiatric disorder (McGuire, 2000).

Some studies have hypothesized that levels of preoperative psychological disorders such as anxiety (Kain et al., 2004) or even depressive disorders (Leung et al., 2005) could predict emergence of postoperative delirium, but other studies could not confirm these results (Detroyer et al., 2008).

In our case report, as mentioned above, no somatic causes could be found. One could argue that the ICU environment described classically as traumatic and stressful could represent a significant explanation for this delirium, considered as a stress response syndrome after surgery. Being exposed to a threatening environment such as an ICU with the loss of personal

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control, the inability to communicate needs, and the sense of helplessness, can create a psychotic experience and a posttraumatic stress disorder especially among survivors (Davydow et al., 2008). Being exposed to a threatening environment such as an ICU with the loss of personal control, the inability to communicate needs, and the sense of helplessness, can create a psychotic experience and a posttraumatic stress disorder especially among patients survivors from their somatic problems (Davydow et al., 2008).

Our patient, after she recovered from her delirious episode, did not recall any sense of frightening or terror launched by the ICU environment. No post-traumatic stress delirium was involved.

Interestingly, she reported having experienced major fear of death before her surgery. She was in a grief period, having had with two recent losses (one a colleague of the same age, the other a close friend). From a psychoanalytic point of view, we cannot rule out defense mechanisms characterized by projection and identification. At the time of the surgical procedure, she had not been able to share her grief and benefit from psychotherapeutic support.

Our hypothesis is that being in the ICU environment had represented to her her own impending death with identification with her friends'death. She could not express her anxiety and grief with words, so instead she developed an episode of "psychosomatic" delirium. Delirium in some special case should be considered a "psychosomatic disorder" or a defense mechanism against death anxiety. The fact that a psychoemotional stress can have an impact on a somatic disease has been treated with skepticism by medical authorities but is considered as a scientific hypothesis in the psychosomatic and psychoneuroimmunology fields (Kiecolt-Glaser et al., 2002).

Clinicians should be aware that psychological factors, especially the type and degree of psychological distress among surgical ICU patients may cause a delirious state (Nadelson, 1976). Nevertheless, in their daily clinical practice, practitioners must always rule out potential somatic causes before implying that a non-organic cause is responsible for delirium.

CONCLUSION

ICU delirium is the result of a complex interaction between physiological and psychological factors. Frequently seen postoperatively, it has an important impact in terms of hospital mortality and complication rates. Knowledge of differential diagnosis and causality is essential for curative therapy.

Therefore, clarifying not only somatic but also psychological risk factors within the ICU can modify the occurrence and the course and aftermath of delirium. Screening of the predisposing factors and their management helps the clinician to prevent or manage these psychological problems induced by delirium. It is paramount to give adequate attention and appropriate management to psychological stresses engendered by the ICU environment (Nadelson, 1976) and especially to behavioral and psychological aspects associated with this event before and after delirium occurrence. A collaboration with the psychiatry liaison service or the psycho-oncology unit is recommended to better manage this "psychosomatic" problem.

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