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The "near-death experience" during comas: Psychotraumatic suffering or the taming of reality?

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ABSTRACT

An near death experience (NDE) is the experience of an atypical state of consciousness that is induced by the neuropsychological consequences of a passage near death. Far from being a psychologically traumatic event, these experiences never cause flashbacks and can even eliminate the fear of death. Listening to patients who have shared their near death sensations has encouraged the reevaluation of the medical standards associated with NDEs. Over several decades, the patient has been positioned at the center of management decisions, with his or her will taken into account. Certain patients can be revived following neurological events, but their resuscitation is performed with the possibility of serious neurological sequelae, which might prevent a return to normal life. The patient may also remain unconscious, either transiently or in a more long term coma or persistent vegetative state. Nonetheless, several works have demonstrated the presence of neuronal activity, however little, in patients suffering from prolonged comas. The medical team then does not act as if the patient were not there but, on the contrary, considers the patient to be the subject, although unable to speak directly, to whom one speaks and of whom one speaks between caregivers.

Introduction

Although near-death experiences (NDEs) have been described since antiquity, scientific interest in NDEs only began to develop near the end of the 1970s. Individuals who have suffered from apparent "clinical death" but were later revived through resuscitation techniques recount a stereotypical vision of their brief passage through the hereafter. Following a historical perspective and review detailing the phenomenon, we examine the possible psychotraumatic side of NDEs.

Near-death experiences

History

In *The Republic (La République)*, Plato reports the story of a soldier who had a brush with death but returned to the living, saying that he had visited another world. This same strange story has been intermittently revisited by several authors throughout the modern era [1]. However, it took an American psychologist to seize the subject and popularize it in the public consciousness for it to be included in current scientific studies [2]. Moody later described the phenomenon in more systematic detail through a clinical framework. Near-death experiences (NDEs) have been reported in diverse medical conditions such as cardiac arrest, shock, electrocution, and intracranial hemorrhage.

Definitions

In 1975, Moody used the term "near-death experiences" to account for an array of phenomena shared by 150 survivors of clinical death whom medical terminology labeled as "resuscitated" [3]. The subjects initially had obvious difficulty describing these experiences verbally and spontaneously, possibly due to the experience itself, but especially out of fear of negative judgment by others. Moody remarked that a narration of the inexpressible should be elicited by an investigator focusing on the extraordinary in these visions and that only then would the subject have the ability to describe them. Additionally, some individuals having experienced "clinical death" report having heard the medical team's discussions about them during their comas, notably including the likely event of their imminent death. In their dying dream, some subjects made an extreme effort to ask their caretakers to continue their resuscitation efforts, as they were not yet entirely dead. Paradoxical to an objective viewpoint of the critical situation he or she has just experienced, the subject experiences an immense feeling of joy, which bathes his or her psyche in tranquility. The subject's mental space is frequently drawn as a dark enclosure, which often takes the form of a tunnel. In the meantime, the subject thinks he or she sees a light and enters a supernatural universe. Experiences of depersonalization are felt, with the impression that the individual

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is external to their physical body and that they perceive everything via a suspension or, alternatively, an acceleration of time. Occasionally, the subject has the impression that he chooses to come back to life; other times he comes back almost involuntarily. This passage occurs within a biographical retrospective that unfolds in a chronological manner and includes real personages, often deceased. When resuscitated individuals tell their stories to those around them, they receive a cautious or even suspicious response to their initial description. However, if one continues to listen to their story, the objective medical elements reported by the patient care team during the time of the coma are in strict agreement with the narration given by the patient. Far from being a disagreeable life experience, these patients emerge from the experience exhilarated; they report less distress about facing death and alter their beliefs to allow for the possibility of life after death. A general feeling of ease about being in the world is established.

NDEs quickly caught the attention of certain researchers who established *the near-death experience scale*, which is a diagnostic scale that contains four items at four levels. Cognitive factors, emotional factors, depersonalization, and the impression of transcendental ideas are included in the scale [4,5]. The creation of this clinical standard allowed for the initiation of several scientific studies that attempted to determine the sociodemographic and etiopathogenic characteristics of patients experiencing NDEs.

Epidemiology, risk factors, and etiopathogenic characteristics

NDEs are found in 2–20% of revived cardiac arrest patients [4,6,7]. Although cardiac arrest was the original study model, NDEs are described in close to 1% of subjects suffering a different serious cardiogenic emergency, without any apparent sociodemographic difference between the two populations [8]. The majority of studies have failed to define the time of circulatory arrest or the therapeutic technique utilized for resuscitation as risk factors [6–8]. Young patients are more likely to have NDEs, or at least the possibility of recalling the psychological process during the critical event [7]. An investigation of laboratory data, including the water-electrolyte balance and arterial blood gas, indicates that these factors do not appear to be determinants [6,7]. Parnia et al. initiated the first study on this topic, but the authors only ended up finding four cases of NDEs over the course of one year [6]. Another prospective multicenter study performed in the Netherlands during eight consecutive years identified 41 NDEs in nearly 250 cardiac arrests. The team performing the study did not identify gender, the level of education, a delay before the restoration of spontaneous circulation, the pharmacologic therapies utilized, or the serum sodium level as risk factors [7]. Any cultural influence appears to be very limited in determining the occurrence and expression of events [9]. Only the frequency of references to a tunnel has increased with the time between the initial descriptions and the latest studies. More than just a cultural and social icon [10], the image of a tunnel is a rather appropriate articulation that has been popularized to express a ubiquitous phenomenon [9]. NDEs are stable with advancing age, which is to say that they are little altered or fictionalized by changes in memory; the description remains intact several decades following the initial experience, and neither embellishment nor diminishment that might differ from the original description are found [5,7,11].

There is no lack of neurobiological theories to account for the possible etiologies of NDEs. These remain hypotheses at present and include NMDA (N-methyl-D-aspartate) receptor function, serotonin and endorphin levels, and hypoxia and hypercapnia, among others. Some authors have recently focused their efforts on the temporal lobe, where certain lesions and associated epileptic events have similar symptomatologies to NDEs [12]. This physiological theory is a work in progress; exploratory cerebral functional studies will aid in defining the cortical and subcortical areas involved. We propose a psychopathological approach, postulating that stress and trauma models will be useful for the understanding of this phenomenon.

Searching for psychotraumatic determinants at the time of NDEs

A reaction to extreme physiological stress

In an effort to understand NDEs, numerous studies have focused on the paradigm of stress as a predictive element for posttraumatic stress disorder (PTSD). Greyson et al. performed a research study that comparatively analyzed two groups of subjects: those who had suffered a traumatic event and experienced an NDE correlated with this event and psychologically traumatized subjects without a connected NDE [13]. The patients who experienced NDEs had a psychometric profile with a higher number of total items on the Impact of Event Scale, which were likely due to intrusions because of the small proportion of patients exhibiting an avoidance of thoughts. Despite this, these scores were clearly lower than the classically described thresholds for PTSD [13]. The study discussed the topic only because the stressful life events that were described (illness, motor vehicle accident, attempted suicide) only rarely lead to a flat electroencephalogram, which is routinely found in cases of complete cardiocirculatory arrest. Despite this major bias, the authors found that more than 75% of the patients experiencing NDEs can recollect the supposedly traumatic event without being able to ascertain if it was actually a flashback. It appears that these memories of the events are only rarely due to flashbacks and are rather simple memories for which the structure of the study protocol favors recollection. In research studies, it is favorable to differentiate between the events that are considered the source of clinical death and the NDE in itself, which is secondary to this apparent death. Recollecting these events could be a source of stress, which we must note would not be predictable but instead depends on the characteristics of the event and its subjective recollection. It would be necessary to compare the psychotraumatic recollection of subjects who have experienced a cardiogenic event without associated circulatory arrest with the recollections of those who have escaped actual clinical death through resuscitation. A dimensional model describing NDEs as a function of the intensity of the psychological and physiological stresses each subject has experienced could be useful. Some authors have worked from this perspective, using both the possibility of an imminent cardiac arrest leading to non-existent cerebral blood flow and cardiac and circulatory events without complete cardiac arrest as the stressing experience [14]. Gamper et al. found that nearly a third of the subjects who have survived a cardiocirculatory arrest without any obvious neurologic lesions suffer from posttraumatic stress disorder [15]. Without specifically looking at the clinical information of the NDE patients, Ladwit et al. found as many psychotraumatic disorders in subjects who experienced cardiac arrest as in acute coronary syndrome patients who did not experience a cardiac arrest but were managed emergently for a potentially anxiogenic and mortal symptomatology [16]. The response to stress was less pronounced in reaction to the NDE than a serious organic medical condition not portending cardiac arrest but possibly being considered a paroxysm of psychological and physical stress. Certainly, a cardiac arrest can occur suddenly, limiting the stressful perception of immediate danger, but we have found that subjects can have psychological activity despite an apparent state of clinical