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CASE REPORT

Lightening up before death

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ABSTRACT

A lightening, or clearing, of the mental state in the hours or days before death, particularly in those delirious, is occasionally noted by those caring for the dying. Similar phenomena have been described in the natural world and in classical literature. This brief period of lucidity is generally followed by a rapid terminal decline. The author reports on his experience with six cases illustrating this phenomenon. The increasing use of palliative sedation may diminish the possibility of lightening up before death occurring. The theoretical concepts of Hughlings Jackson may provide an explanation for this phenomenon.

KEYWORDS: Lightening, Death, Delirium, Lucidity, Hughlings Jackson

Sir Henry Halford, a long serving president of the Royal College of Physicians, wrote "We have all observed the mind clear in an extraordinary manner in the last hours of life" (Halford, 1833, p. 90). This period of lucidity in the terminally ill Halford considered to be a very poor prognostic sign. William Munk, another experienced Victorian physician, referred to this phenomenon as "lightening up before death" (Munk, 1887, p. 35). "Instances occur, not very rarely, where the delirium ceases and the mind again for a time becomes clear and sensations key, to be followed, however, ere long by a return of delirium, or it may be of coma, or a rapid sinking of all the bodily powers and speedily death", Munk (1887, p. 34) wrote.

The Victorian physicians opined often in the absence of quantitative information. It is difficult to know the prevalence indicated by Munk's comment "not very rarely," other than suggesting such clinical instances were freely acknowledged to occur. Many who work in modern hospices likewise recognize the clinical occurrence, though they suggest that its frequency is "rare." Of 100 consecutive hospice deaths attended by the author six definite cases of brief periods of "lightening up" in the final 48 hours of life were recognized. The unit staff had been alerted to this phenomenon and, over this period of approximately 6 months, were particularly vigilant about the possibility of it occurring close to death. As shown on Table 1 there were no obvious characteristics of these patients to indicate that such a phenomenon would occur. Three had central nervous system involvement of disease, four were acutely delirious, and one patient had required high dosage opioid therapy. The doses of benzodiazepine and antiemetics were within the usual and acceptable clinical range and three of the patients were not on benzodiazepines. There appeared to be nothing particularly remarkable about either the patient or the family. The periods of lucidity tended to last less than 12 hours and were invariably followed by a precipitous clinical decline.

A representative case report is as follows: A 73-year-old retired electrician presented the previous year with persistent cough. Chest X-ray indicated a lung lesion that was determined to be non-small-cell carcinoma. Six months after a lobectomy, he suffered an epileptic seizure. Whole brain irradiation palliated the symptoms of cerebral metastases for a further 6 months, at which time he developed an uncontrollable series of major seizures and left upper limb weakness. Corticosteroids and anticonvulsants promptly relieved the cerebral symptoms and signs, though within weeks his neurology had progressed. On admission to the hospice he was aphasic, doubly incontinent, had a dense hemiplegia, and had fitted

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Table 1. *"Lightening" patients*

Age	Gender	Diagnosis	Morphine	Benzodiazepine (midazolam)	Anti-emetic[a]	Characteristics of lightening up
73	M	NSCC lung	20 mg	45 mg	haloperidol 3 mg	Enhanced alertness and responsiveness
59	M	nasal SCC	1000 mg	45 mg	nil	Telephone conversation with sister
44	F	ovary	30 mg	nil	levomepromazine 18.25 mg	Delirium cleared
78	M	mesothelioma	60 mg	15 mg	haloperidol 2 mg	Enhanced alertness
45	M	medulloblastoma	10 mg	nil	haloperidol 2 mg, cyclizine 75 mg	Lucid conversation with children
54	M	pancreas	180 mg	nil	nil	Farewelled family

[a]Medications mg/24 hours subcutaneous.

the previous night. He could no longer comply with his oral medications. Parenteral (subcutaneous) clonazepam (2 mg SC/24 hours) was introduced to replace oral phenytoin, and morphine (20 mg/24 hours) for chest pain and dexamethasone (4 mg SC/24 hours) were continued. His clinical state settled for 36 hours, though the neurological signs only partially remitted. Then, remarkably, he regained speech and became alert and verbally responsive to his family. Within 12 hours he lapsed into a coma and died the following day peacefully.

It is curious that such a recognized clinical event has attracted so little medical interest since Victorian times. The only modern reference to lightening up is a 1975 study of 250 patients with advanced malignancies and terminal heart failure during the days and weeks before their death (Witzel, 1975). Witzel commented that "immediately before death the need for analgesic medication decreased and many patients exhibited a short increase of vitality, appreciated food again, and appeared to be generally improved." The literature on near death experience suggests that improved speed and clarity of thought and memory are often associated with enhanced light perception, and out-of-body experiences (Owens et al., 1990). The recall of such experiences tends to be vivid and expressed in positive emotional terms, perhaps indicating a similar phenomenon to lightening up.

Munk (1887, p. 32) commented upon the clinical association of lightening up before death and delirium. Delirium in the 48 hours preceding death is reported in up to 80% of patients dying of malignant illness (Lawler et al., 2000). Delirium is a fluctuating condition. Variability of the mental status, which typically may sundown and deteriorate as night falls, is a characteristic feature of delirium. Toxic influences are seldom persistently intense, there is an inherent variability of the level of consciousness, and the moderating influences of the environment on delirium may all account for some degree of fluctuation. The management of delirium involves attempting to raise the deliriant threshold and thereby prolong lucid periods (Macleod, 2006). In the terminally ill, it could be mere coincidence that the delirium briefly clears, then proceeds, despite accumulating causative influences such as physiological toxins and organ failure. The predominant symptom indicative of a need for sedation of the dying is that of irreversible delirium (Porta Salas, 2001). The international consensus of the practicing of terminal sedation in specialized palliative care settings is about 25% (Porta Salas, 2001). Opioids were freely administered by Victorian physicians; however, sedation and antiemetic therapies were not. Deep sedation is generally induced by the titration of benzodiazepines, augmented by major tranquillizers, usually prescribed as antiemetics. Perhaps the explanation for the rarity of lightening up occurring at the modern death bed is that modern pharmacological practice deprives the patient of the opportunity.

There are references to this phenomenon in classical literature and art. One of the earliest reported (and later painted) instances was that of Queen Dagmar, the wife of King Valdemar (the Victorious) of Denmark (1186–1212; Oakley, 1972, pp. 58–61). The Swedish artist Georg von Rosen in 1898 portrayed Queen Dagmar in a painting hanging in Frederiksborg Castle, Denmark, as arousing from her "death" to acknowledge her husband's return from his hunting expedition. She apparently had momentarily opened her eyes on his arrival, then died. Cervantes (1615/1952, pp. 936–938) described the remarkable return of sanity of Don Quixote during his terminal febrile illness. The classical Chinese novel *Dream of the Red Chamber*, written by Tsao Hsueh-Chin (1724–1764), details a death scene in which the tragic hero, Black Jade, at the

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hour of the wedding of his lover Pao-you to another, rouses from a coma to plead to her in desperation not to marry (Weir, 1980, p. 108). The chronicler of the death of the Russian poet Pushkin by sepsis after pelvic wounds were inflicted in a pistol dual reported that "one of those sudden turns for the better which is so illusory of fatal illness" occurred the evening before death (Simmons, 1937, p. 422). The German Storm-Troop officer of The Great War (1914–1918), Ernst Junger, wrote, "Next to my bed a sergeant-major who had lost a leg lay dying. In his last moments he woke from delirium and got the nurse to read him his favourite chapter of the Bible. Then in a voice scarcely audible he asked all his ward companions to forgive him for [having] so often awaked them from sleep by his delirious ravings, and then just before he died a few minutes later he tried to cheer us up with an imitation of our orderly's comic dialect" (Junger, 1926/1996, p. 117).

Similar phenomena are recognized in the natural world. The Green Flash, the momentary flash of emerald green that can be occasionally be witnessed at sea as the sun sinks below the horizon, is the dramatic burst of light before darkness. The transient increase of revolutions prior to a motor exhausting its fuel supply gives rise to the Antipodean term "the lawnmower effect" to this phenomenon. The whalers termed the final fight of their prey prior to death as the "flurry" and knew this was a very dangerous moment for those roped to "the beast" in their tiny boats. Melville wrote that this flurry contained intent for "that strange spectacle observed in all sperm whales dying—the turning sunwards of the head, and so expiring" (Melville, 1851/1972, p. 606).

It is a reassuring thought that somehow the dying do recognize death approaching, "rally," and focus remaining energy on a brief episode of revitalization prior to their acceptance of the inevitability of their demise. A quickening or "peaking" of cognitions during life-threatening encounters has long been recognized. Samuel Johnson quipped that, "when a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully" (Boswell, 1791/1986, p. 231). A century ago Albert Heim, an alpinist and geology professor, interviewed 30 climbers who had confronted death in mountaineering falls. He summarized their experiences and feelings as follows: "Mental activity became enormous, rising to a hundred-fold velocity or intensity. An overview took in the relationships of events and their probable outcomes with objective clarity. Time became greatly expanded. The individual was not confused, but acted with lightning quickness in full accord with an accurate assessment of the situation" (Heim, quoted by Noyes, 1972). The self-preservation value of this reactive psychological process presumably is dependent upon a conscious recognition of the danger and a neurotransmitter system still able to respond.

The theoretical conceptualization of the nervous system of John Hughlings Jackson (1835–1911), which set the framework for scientific neurology, provides a putative explanation of lightening up before death (Stengel, 1963; Power, 1965; Levin, 1965; York & Steinberg, 2002). Hughlings Jackson extended the philosopher Herbert Spencer's evolutionary concepts to the dissolution of the nervous system. Hughlings Jackson established principles determining nervous system organization commensurate with its function as the organ of adaptation to its environment (internal and external). Hughlings Jackson proposed a hierarchy of sensory motor levels of functioning, similar to the Aristolean tripartite "soul." The Doctrine of Dissolution is that illness preferentially destroys the higher centers, thus releasing the lower centers from their control. There is a dissolution toward evolutionally earlier, automatic, reflexive, simple but stably organized function. Order is reestablished against the disorder of disease. This regressive model of illness allows biological homeostasis to be regained. Believing in a strict separation of mental and nervous systems, a parallelism between mind and body (the Doctrine of Concomitance), Hughlings Jackson integrated Russell Reynold's concept of positive and negative symptoms physiologically and ontologically. Reynolds considered the positive symptoms as the excess or alteration of vital properties. Dissolution in the central nervous system resulted in a double process, the loss of function (negative symptoms) and the emergence of exaggerated function by the removal of inhibitory processes. Lower level functioning is released from higher inhibitory control. Higher centers offer the least resistance to dissolution, their destruction releasing their inhibition on evolutionally lower systems of behavior. In a strenuous attempt to adapt, the damaged central nervous system floridly and crudely responds. However, if the disease is progressive, this dynamic revitalization of the remaining damaged brain fades. In the dying, the window of opportunity for the adaptive functioning is but brief, perhaps a lightening up before death. The subsequent rapid decline and death is not unexpected, as this phenomenon indicates that the central nervous system is now irreparably affected by the disease.

The extension of the life of cancer patients, which increases the likelihood of the brain being directly involved in the primary disease, in addition to the ability of modern medicine to maintain life in the face of not insignificant vital organ impairment might indicate that the occurrence of lightening up occurring

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should be increasing. This is probably not the case. The increasing use of sedative medications in the terminally ill may be an explanation. As clinicians we have the ability and the responsibility on occasions to deeply sedate patients with intractable symptoms. This may deprive them of the possibility of lightening up before death. Predicting the occurrence of this phenomenon, possibly withholding sedation, and ensuring the presence of relatives when it occurs, would all be clinically desirable. Lightening up can provide an opportunity to "set his house in order" (Halford, 1833, p. 20), offer a death-bed speech, and bid farewell.

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