Paradoxical Lucidity

Definition

Paradoxical lucidity is a little known phenomenon where there is cognitive lucidity and communication in patients with severe dementias, especially around the time of death. The Phenomenon can provide new insight into both neurobiology and further treatment of dementia.

Paradoxical Lucidity has been defined in Paradoxical lucidity: A potential paradigm shift for the neurobiology and treatment of severe dementias as "an episode of unexpected, spontaneous, meaningful, and relevant communication or connectedness in a patient who is assumed to have permanently lost the capacity for coherent verbal or behavioral interaction due to a progressive and pathophysiologic dementing process." So far dementia is considered an inexorable and irreversible process of structural neuropathology. As anecdotes of unexpected or paradoxical mental lucidity have been reported for centuries in patients with dementia, our definition must be revised to include a reversible and functional aspect of pathophysiology, even at late stages.

What we know so far

PL has been reported in not only dementia but also in patients with tumors, brain abscesses, strokes, and meningitis, as well as in comatose patients who awaken shortly before dying. Here we will observe PL. In this study, there were 49 patients, 43% of PL episodes occurred within the last day of life, 41% within 2-7 days before death, and 10% within 8–30 days before death. This study is done on mostly cases reported before 1849. A more recent study was done in 2017 Review paper. Terminal lucidity in: Current Problems of Psychiatry Volume 18 Issue 1 (2017). Here out of 38 patients, almost half had lucidity one day before death. This episode of lucidity can last any duration from 5 minutes to several days. The patient is fully lucid and aware during this time and can often have meaningful expressions of different variety and depth. The PL can be associated with "deathbed visions", often of loved ones.

Mechanism of PL

The main reason behind dementia is irreversible degeneration of the cerebral cortex and the hippocampus. Alzheimer's is characterized by degenerative changes in a variety of neurotransmitter systems. These include alterations in the function of the monoaminergic neural systems that release glutamate, norepinephrine, and serotonin as well as a few neuropeptide-containing systems according to Neuropathologic changes in Alzheimer's disease. - NCBI. These changes cause confusion, memory loss, disorientation, change of behaviour etc. As these are irreversible changes and PL occurs suddenly, it is very unlikely that there is any nerve regeneration. There might be complex forces at work here, for example; complex adjustment in neuronal signaling, alterations and modification at synapse and even temporal reversal of or compensation for neurotoxic protein effects such as chronic functional disability.

There have been very few studies on PL mechanism, so it remains an unexplored area. The biological explanation can be given based on the related phenomena. As PL occurs before death, neurobiological data related to NDE's (Near Death EXperience) are of relevance. There has been many reported surges of brain activity at or before the time of death. Surges of

Electroencephalogram Activity at the Time of Death: A Case Series | Journal of Palliative Medicine explains that in each case, loss of blood pressure, as monitored by indwelling arterial lines, was followed by a decline in BIS/PSI activity followed by a transient spike in BIS/PSI activity that approached levels normally associated with consciousness. This spike in electroencephalogram (EEG) activity had short duration. There are many possible explanations provided for this phenomena, one is that the brain suffers hypoxia before death which leads to activation of the brain.

A surprising field of study related to PL is physics. In non biological networks, there are periods of spontaneous recovery before the network collapses.These similarities have led to computational modeling studies of large-scale brain networks.

Conclusion

Paradoxical Lucidity, or Terminal Lucidity when used for patients of all diseases, is a phenomenon observed for almost a century but is yet to be explained. There are studies attempting to explain this amazing phenomenon. Understanding the mechanism behind PL can radically change treatment of dementia and some other neurological phenomenon.

Agnosia

Definition: ‘Agnosia,’ a neurological term of Greek origin (a þ Greek gnosis), signifies a lack of knowledge and is virtually synonymous with an impairment of recognition.
Agnosia is a disorder where a patient can not recognize or identify objects, sound, person despite having normally functioning senses. There is no deficit in attention, language, familiarity to the stimulus or memory. The disease occurs due to damage to the areas regarding spatial processing, visual and motor information processing and attention. As these areas are mainly located in the parietal cortex and occipito temporal area, head injury can be a reason behind this.

Symptom

“Agnosia” is when recognition impairments are confined to one sensory modality. It can include , vision, or audition, or touch. If there are two or more modalities defective, the appropriate word is amnesia.

For example, Agnosia is an appropriate term where the patient can not recognize a previously familiar person, or cannot recognize a cup by sight, but can tell its color or function when they touch it.

Types

Classically, two types of agnosia are recognized. They are Associative and Apperceptive.

According to the Encyclopedia of Neuroscience 'Associative' agnosia is when a patient fails to recognize due to defective activation of information pertinent to a given stimulus. 'Apperceptive' agnosia referred to a disturbance of the 'integration' of otherwise normally perceived components of a stimulus.

Other classification based on the type of senses involved are VIsual, Tactile and Auditory Agnosia. Amongst these visual agnosia is the most common and better understood.

Causes

Agnosia can be due to strokes, dementia, trauma-induced by a head injury, genetic etc.

Diagnosis

Pure agnosia being very rare, a number of tests are done to rule out other possibilities. CT, MRI is undertaken as well as a number of other tests

Treatment

Treatment targets to improve the quality of patients life. A multidisciplinary approach is taken. Very few regain their sensory function. The prognosis differs and depends on the patients age, health, type of agnosia, degree of impairment, type of therapy etc.

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