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**Abstract**

Brain death is a situation where all the functions of the brain are lost to the extent that all the life supporting systems of the body are halted. Brain death is used in most jurisdictions as a proof of both legal and clinical death. Before brain death can be determined, there are several tests that should be conducted so as to rule out other conditions that might manifest themselves as brain death. Once it has been confirmed that brain death has taken place, there is no medication and the patient is simply removed from the life support machines. However, the organs from these patients can be harvested and transplanted to patients who may be suffering from organ failure. There is however need for healthcare providers to ensure these patients are well managed to eliminate chances of compromising the functional integrity of the organs.

**Brain Death**

Brain death refers to a situation where the brain completely loses all its functions including those functions that are vital for sustaining life. Brain death is irreversible and once a person is determined to be brain dead, he is legally considered to be dead (Foley, 2011). Brain death was a concept that was developed to introduce new criteria for determining death. Traditionally, one was considered to be dead if he was not in a position to breathe independently and the heart beat had stopped. However, with developments in the medical field, it was possible to resuscitate a person who was considered to be dead. These new developments invalidated the definition of death at the time and it was therefore necessary to come up with another definition. The new definition of death, which is the brain death, took into consideration all these shortcomings  of the previous definition and one can only be declared to be dead if there are irreversible damage to the brain that affects all the body functions. The absence of all the functions that are controlled by the brain stem and cerebrum is a confirmation that one is brain dead.

In many countries today, the concept of brain death has been adopted as the legal as well as clinical definition of death. This is irrespective of the person being in life support machines that helps to maintain life support processes. Before a person can be determined to be brain dead, there are a number of tests that must be conducted to rule out other factors that can present themselves as brain death. Anesthesia, especially self administered may present signs that are similar to those of brain death. Such a person however is not considered dead and additional tests must be conducted to truly ascertain that the vital processes are not functioning. Persons who have been confirmed to be brain dead are candidates for organ donation. Since their organs are still functioning, they can be used by other patients who still need them.

**Description of Brain Death**

Brain death is considered to have occurred when the brain has lost all its essential functions that support life to an extent that the affected person cannot continue living without the support of machines. In describing a brain death, there are three main findings that must be present. The person has to be in a coma, suffer from apnoea and there should be no brainstem reflexes.  Determination of brain death is usually a clinical issue and necessary tests must be conducted so as to rule out other factors that may have led to the condition.

There is a process is involved in the certification of brain death. First, there must be evidence that a physical examination was conducted on the person and it was clearly recorded that there was brain dysfunction. The physical examination must also show the probable cause of the brain death and prove that the condition is irreversible. Exclusion tests must also be conducted to rule out any other factors that might present themselves as brain death. There are some conditions that have been identified to confound diagnosis of brain death. Conditions such as hypothermia, shock, and use of certain drugs have been found to present symptoms that are similar to those of brain death. For example, in the case of hypothermia, the extremely low body temperatures can lead to symptoms that are similar to that of brain death. To ensure that these symptoms are not as a result of hypothermia, the patient’s temperature should be stabilized to observe whether there are any notable changes. Failure of the neurological system is also another condition that can present symptoms that are similar to those of brain death. The necessary tests should be conducted to rule out any cases of neurological malfunction.

**Methods of Diagnosis**

There are several methods that are used in diagnosing brain death. One of such methods is nuclear medicine examination. This method uses nuclear imaging to examine specific organs. Small amounts of radioactive substance are administered to the patient. These patients are then subjected to gamma radiation which clearly visualizes the various body organs. The main advantage of this method as compared to the traditional x rays is that it helps in identifying medical conditions that cannot be identified in the ordinary x ray imaging. Through the use of this method, it is possible to observe organs such as the heart and identify any heart movements or any flow of blood into or out of the heart (Hill, Hutton, Nightingale, Ridley & Short 2012). The absence of heart beat or blood flow is an indication that the the heart is not functioning. Another method that is used in diagnosing this disease is electroencephalogram testing. This technique involves detecting electrical impulses in the brain. Any living organ emits electrical charges. When an organ dies, these electrical charges are not produced any more and this is enough proof that the organ is dead. In a person person suffering from brain death, the administration of this test shows absence of blood flow into the brain which confirms brain death.

**Treatment of Brain Death**

Attempts to treat brain death have been made with the aim of reversing the almost irreversible state that is caused by brain death. These attempts are however in their initial stages and no significant strides have been made in this field. One of the studies which is a start up program entails the use of lasers and stem cells. The idea behind this treatment is to introduce new cells in the brain stem so as to stimulate the brain to produce new functional cells (Shewmon, 2011). In this kind of treatment, stem cells together with peptides are administered through injection. In addition, nerve stimulation and laser therapy are also integrated so as to increase the chances of the brain stem to produce new cells. Although there are efforts to treat brain death, the available statistics are not promising. Statistics show that there is no single person who has ever recovered from brain death. As such, it is unlikely that these efforts will bear fruit and help in bringing to life those who have been diagnosed to be suffering from brain death.

**Prognosis/other considerations**

Considering the fact that there is no one who has ever recovered from brain death, it is very unlikely that efforts to stimulate the growth of new stem cells are likely to be unsuccessful. Brain death is associated with multiple organ failure since the brain controls the functions of almost all he organs in the body. As such, even if there were slight chances of recovering from brain death, it would be very difficult to bring to life all other organs that have failed. When brain death has been confirmed, what follows is the switching off of all the life saving machines. The only option that remains after it had been confirmed that the patient is suffering from brain death is to consider donating the organs before the machines can be switched off. The main challenge however is that most organs usually deteriorate in their functionality when the patient is put on life support machines and this affects the success rate of organ transplants (Shewmon, 2011). As such, it is important for healthcare providers dealing with patients suffering from brain death to manage them in such a way that the integrity of the organs is not compromised. In this way, it will be possible to obtain organs that have the functional integrity and which will enhance successful organ transfers.

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