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Suspended Animation-An Overview

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Abstract:

The cases of suspended animation are reported in newspapers and on various channels of television alleging the negligence & incompetence of doctors. Present Paper is an attempt to suggest precautions for doctors to avoid such allegations.

Keywords: - Apparent Death, Lazarus Phenomenon.

Introduction:

Heading home after a late night party near Kobe a young Japanese stumbled and hit his head. Falling unconscious, he lay buried under snow and ice until discovered 24 days later in October 2006. The dead body was taken to a Kobe Hospital where – despite the absence of respiration and pulse – Doctors treated him for hypothermia and blood loss, the young man woke up and was discharged after full recovery [1].

Similarly, a girl aged 9 year while playing got electrocuted with a faulty cooler. The child was taken to a private hospital, where doctors declared her dead. The child was taken back to home but a male nurse residing in neighbourhood started cardiac massage and heart started to function. She was shifted to a Government Hospital, admitted, kept on artificial respiration & other measures required. The girl remained alive for 14 days & then died [2].

Such cases of suspended animation are reported in newspapers and on various channels of television alleging the negligence & incompetence of doctors are due to errors in certification of death. At times an attendant of mortuary/doctor find a person declared dead in night, shifted to mortuary and sitting alive on mortuary table next day morning.

It is also a common fear in doctors, conducting the postmortem examination in fields that they may find a beating heart on opening the thoracic cavity. The medical professional may suffer from the medico-legal problem in cases where suspended animation has been reported & rigor mortis has not appeared.

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In suspended animation signs of life are not found, as the functions are interrupted for some time or are reduced to minimum [3]. The suspended animation can be classified as under: (1) Mythological; (2) Natural; (3) Voluntary; (4) Involuntary; and (5) Therapeutic.

1. Mythological: Bhism Pitamhah who remained alive on bed of arrows for many days and then died (Mahabharat) was possessing power of dying when he pleased. Satyavan while cutting the tree died & lord of death (YamRaj) took his life away. Savithri follows the lord and won back the life of her husband [4]. There are many stories in Hindu Mythology that after death of child, his parents prayed to God & child resurrected by God.

   Similar stories are illustrated in other religions also. Lizarus the biblical character was resurrected by Christ four days after his death [5]. The Old Testament illustrates two other instances. A life less child was brought to Elijah the Prophet: Elijah prayed to the lord and stretched himself upon the child three times and child survived [6]. Elisha was a disciple of Elijah who was summoned after a boy had collapsed and died. He arrived several hours later, prayed to lord, placed himself over the child and put his mouth on his mouth, eyes on his eyes and hands on his hands, the boy became warm, sneezed seven times and came back to life [7].

2. Natural: Seed is the best example of natural Suspended Animation. It remains in a state of Suspended Animation till it is sown (resuscitation). Hibernating animals falls under the same class like frogs & snakes etc.

3. Voluntary: The cases of voluntary Suspended Animation are well known in India. Practitioners of yoga can pass into a trance, death like in character. A case has been reported in which Ramdev Ji Maharaj remained in Samadhi for about 62 hours [8]. One Baba Gyan Sawroop Saraswati remained in Samadhi for 5 Hrs. in a 10 Feet Deep Chamber. A Similar case has been published of Colonel Townshend a patient of renal disease and having power of dying when he pleased and then coming to life. He demonstrated his power in presence of Dr. George Cheyne & two others. They were confused and puzzled and not able to form any rational scheme that might account for it [9].

4. Involuntary: The state of suspended animation lasting from a few seconds to half an hour or more may be found in cases of catalepsy, hysteria, as well as in cholera, typhoid state, sunstroke, concussion, drowning, hanging, frozen coma, electrocution, tetanus, convulsions, poisoning by narcotics, surgical shock and so called still born infants. Cardiac massage or electric stimulator accompanied with artificial respiration can revive this state [9- 12].

5. Therapeutic: Suspended animation is defined as the therapeutic induction of a state of tolerance to temporary complete systemic ischaemia, i.e., protection-preservation of the whole organism during prolonged circulatory arrest (>or = 1 hr.), followed by resuscitation to survival without brain damage. The objectives of suspended animation include: a) helping to save victims of temporarily uncontrollable (internal) traumatic (e.g. combat casualties) or non traumatic (e.g. ruptured aortic aneurysm) exsanguinations, without severe brain trauma, by enabling evacuation and resuscitative surgery during circulatory arrest, followed by delayed resuscitation. b) helping to save some non-traumatic cases of sudden death, seemingly un-resuscitable before are only feasible during a state of no blood flow [13].

Discussion: - It is a common practice in hospitals that cardiopulmonary resuscitation is not attempted in cases that are brought to hospitals without signs of life. The individual may impart every appearance of death but continuous artificial respiration may be helpful in restoring life. In some jurisdictions of United States, it is still mandatory that in such cases the resuscitative measures be continued till liver mortis becomes manifest [14] but slight hypostasis appear before death in those who die from a prolonged illness in which a terminal circulatory failure permits some ante-mortem pooling of the blood at the back of body. On the other hand, hypostasis can be unduly delayed. Particularly in anemia and in deaths associated with considerable loss of blood; in these circumstances it never develops very well [15]. Hence it is not safe to rely on appearance of Postmortem staining & cardiopulmonary resuscitation be continued till rigor mortis appears.

Cardiac arrest followed by cardiopulmonary resuscitation is very common event. The reported incidence of cardiac arrest & cardiopulmonary resuscitation from all causes is 68 per 100,000 per year[16]. However, return of spontaneous circulation after cessation of cardiopulmonary resuscitation has been reported, albeit very rarely.

Dynamic hyperinflation during positive pressure ventilation is recognized cause of electro – mechanical dissociation during cardiopulmonary resuscitation in patients with obstructive airways [17, 18] in such patients, rapid ventilation may produce hyperinflation of the Chest leading to elevated end expiratory pressure. This in turn can lead to decreased venous return and cardiac output and the circulation could be undetectable even in the presence of a perusable cardiac rhythm, cessation of cardiopulmonary resuscitation may permit return of venous flow and spontaneous circulation.

In severely raised intra cranial pressure the one of options for treatment is ventilate to reduce PCO_2 [19]. Hyperventilation decreases the production of CSF by its vasoconstrictive effect & reducing of cerebral blood flow. The dead body handed over to relative who returned back from home with child crying. One must take great care before declaring them dead. Hyper ventilation should also be avoided in patients with ischaemic disease.

Conclusion:

1. The cardiopulmonary resuscitation should be attempted in all the cases even if the person is brought to hospital without sign of life.

2. Cardiopulmonary resuscitation should be attempted till the rigor mortis starts to develop.

3. During cardiopulmonary resuscitation hyperventilation should be avoided in cases of ischaemic disease. One must take great care before declaring dead in cases of raised intra-cranial pressure, as hyperventilation is one of the options for treatment.

4. The possibility of cardiac arrest should be kept in mind that is a common event during cardiopulmonary resuscitation.

5. Dynamic hyperinflation during positive pressure ventilation should be avoided in patients with obstructive airways.

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