Case Report

Primary Shock Death in Thermal Burns

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Abstract

Thermal burns are still the major causes of death in India. Instant death is known in cases ofthermal burns. Usually the burn patient survives the primary shock and dies due to secondary shock, toxemia, septic shock and other causes.

The instant death is mostly due to primary shock in thermal burns involving head and neckregion.

Key words: Primary shock, Thermal Injury, Secondary shock, Instant death

Introduction

The Thermal injuries causing death are still a major cause of death in working age groups. The stigma of dowry death is also going on. The causes of death due to burns are primary shock, secondary shock, suffocation, toxaemia, sepsis, hypokalaemia, acute tubular necrosis, secondary injuries of fall & pulmonary embolism, etc.

When the area of burn is more than 30%, the cause of death is easy to ascertain. But when the surface area involved is less, there are various doubts regarding causation of death from relatives and investigative agencies.

In our set up, total 996 medico legal post mortems were done in year2014, out of this 64 were thermal injuries. The causes of death were septicaemia in 65% of cases and secondary shock in 34% cases, only one case of primary shock is documented.

The female was staying alone in apartment and she was suffering from diabetes mellitus since last 10 years. She has committed suicide by pouring kerosene on head. As she sustained only19% burns before death, doubts were raised by relatives for murder and dacoity.

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During inquest it was documented by investigating officer that there were no loss of property at the home and no other injuries over body.

Case Report:

It is a case of 62 year old married female staying alone and suffering from Diabetes Mellitus. She committed Suicide by pouring Kerosene over her head. Her son was residing in same area nearby. He noticed her dead with thermal injuries on one morning during his routine visit.

The dead body was lying on bed room floor with burning of face, neck and singeing of hairs. Few superficial burns were also noted over shoulders, upper part of chest& back. Also patches of superficial burns seen over both elbows, Rt. buttock. All the areas of burns were showing signs of Carbonization, Redness. The total area of burns over body was calculated by rule of 9. It came to approximately 19 % with II degree involvement of Head, Neck and Face region (9%). No palpable fractures were noted. The neck dissection was done meticulously to rule out injuries of compression of neck. The Trachea was showing evidence of soot particles in lumen. All other organs were congested. The abdomen was showing midline vertical scar of hysterectomy done in the past. The head did not show any

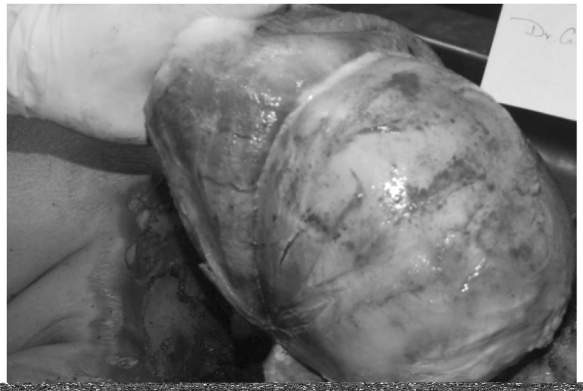
under scalp injuries. The brain was showing 4x3 cm sized subarachnoid haemorrhage over left temporal area and severe congestion of vasculature. The cyanosis of finger nails was present but moderate.

The blood samples were analysed for any poison, carbon monoxide levels which came negative. The skin scrapping from the margins of burns and area of Carbonization were positive for Kerosene residues.

The container of Kerosene with match box was recovered from the scene of incidence.

The extent of thermal injury was calculated to be approximately 19 %. The fatal burns are usually more than 30% area involvement.[1]There were no other fatal injuries, poisons present. So the cause of death was opined as death due to primary shock due to thermal injury by Kerosene.

Fig 1: Burns over face, neck, shoulder, upper part of chest associated with singeing of scalp hairs and protruded tongue.



Discussion:

The causes of death due to burns are commonly hypovolemic shock or septicemic shock. The other causes being toxemia, carbon monoxide poisoning, suffocation and other secondary injuries and primary shock.[2,3,4,5.]

hows soot particle in trachea. Fig 5: Sl

The primary shock is a neurogenic shock caused by sudden fright, fear, severe pain associated with triggering factors.

The triggering factors can be internal or external. The Internal factors include the

debilitated or weak heart, coronary atherosclerosis etc. The external factors can be any form of attempt to injure or any injury.[6, 7.]

The Neurogenic shock is also called as Primary shock, vaso-vagal shock or reflex cardiac arrest. It results from neurogenic vasodilatation with pooling of blood in peripheral vascular bed causing reduction of venous return. It takes only few minutes to cause death.[5.]

The mechanism of neurogenic shock is in Autonomous nervous system of body. It consists of sympathetic and parasympathetic divisions. The Stimulation of parasympathetic pathways causes inhibition of heart. The sympathetic system receives both pressor and depressor afferent fibers. The pressor effects are vasoconstriction with rise in blood pressure. The depressor fibers cause reverse effects. The weak stimuli of afferent nerve fibers cause reverse effects. The severe pain, fear lead to depressor effects causing peripheral pooling of blood by vasodilation. It will result in to hypoxia by decreasing circulating blood volume. The cardiac hypoxia will result into ventricular fibrillation due to increased sensitivity to catecholamine release. [5,6,7]

So as such the postmortem changes are severe visceral congestion with signs of hypoxia & presence of trigger factor.

The Trigger factor in present case is thermal injury which was not extensive (<30%) to cause death. Other causes of death due to thermal injury being ruled out. The primary shock (Neurogenic shock) remains the sole cause of death. So meticulous autopsy will help to conclude the exact cause of death in practice.

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