



Pathology Biology Section – 2006

G7 Death in a Confined Space

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After attending this presentation, attendees will understand the pathogenesis of confined-space asphyxia through the study of three forensic cases. Confined-space asphyxia is a quite rare event, caused by a lack of environmental oxygen that becomes inadequate to sustain life. This occurs when individuals find themselves trapped in airtight or relatively airtight enclosure, causing depletion of the oxygen supply and they asphyxiate.

This presentation will impact the forensic community and/or humanity by demonstrating the forensic approach in investigating cases of death due to confined-space asphyxia, thereby avoiding confusing this entity for a natural death.

Asphyxia due to a confined space is a quite rare event, caused by a lack of oxygen that becomes insufficient to allow normal respiration. This happens when a person is trapped in airtight space without exchange of air, as breathing exhausts the available oxygen, beginning the asphyxiation process.

The Department of Health, Education, and Welfare defines a confined space as "a space, which, by design, has limited openings for entry and exit combined with unfavorable natural ventilation." Examples of confined space are caves, refrigerators, tunnels, pipelines, sewers, silos, tanks, pits, mines, trenches, holds, vaults, excavations, manholes, and chimneys. In the past, this kind of accident usually involved people working in building, shipyard, and other manufacturing and service industries. As society changes, the causes and modalities of confined space deaths are different. In fact, the illegal immigration phenomenon and the search of new ways to reach Europe have become one of the main causes of these accidents in these last years. People try to enter a country travelling hidden among the cargo of trucks. If the trip is long and the space is very narrow, the deficiency of oxygen could become serious and fatal for the illegal passengers.

This paper presents two cases, occurring in two different Italian regions, describing the deaths of three men by confined space asphyxia during the travel to reach Italy illegally.

The first report concerns the death of two Kurdish men. They were found in the refrigerator van of a truck, completely loaded with watermelons, coming from Greece by a motor-ship and arrived to the port of Brindisi. The autopsies of the two deceased's did not show any remarkable pathology, and histological and toxicological tests were negative. The most significant anatomic-pathological findings of the autopsy were cyanosis of the face and fingernails, copious and deep reddish-purple postmortem hypostasis, visceral congestion, brain and lung oedema, conjunctival petechiae (in one of the two corpses) and fragmentation of myocardial fibres. All these findings were compatible with the diagnosis of death by asphyxia and the discovery of the two bodies in the truck trailer. The circumstances of the deaths confirmed that they were due to confined space asphyxia.

The second report regards a stowaway found in a truck trailer near Trieste. When he arrived to the local hospital he was in coma, with cutaneous temperature at 43°C and completely dehydrated. He died after few hours because of progressive deterioration of general health conditions and massive bleeding from his stomach and bronchi.

On basis of all the clinical symptomatology, the results of laboratory tests and review of the medical records, and the external examination, it was established that the death was due to a "heatstroke". This diagnosis was confirmed by the circumstances of the discovery of the body, and the high environmental temperature (about 40°C). Also in this case, the confined space where victim had been in hiding for prolonged time, without any ventilation, had a key role in causing the death. The lack of oxygen in this confined space, and the overheating within the van of the truck became a lethal combination for this man.

These two reports bring to attention the serious problems of clandestine immigration occurring within a confined space. Confined space asphyxia has caused trouble in the past with occupational deaths, and now seems to come back under a different aspect.

The contribution of the medical examiner to these investigations should be to identify the correct cause of death due to confined space asphyxia. As the few and non-specific anatomic-pathological findings of this kind of diagnosis is difficult to determine without history, it is very important to carry out a careful analysis of the circumstances of the death. A correct diagnosis in these types of cases requires scene information coming from an "on-the-spot investigation."

Confined Space Asphyxia, Death Investigation