G78 The Cave Man in the 21st Century: Chronicle of an Announced Tragedy: Preventive Measures and Repeating Risk

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The goal of this presentation is to describe a building collapse with fatalities in a typical southern Italian location. According to the common definition of a disaster, the authors want to warn against complacency and the underestimation of the appropriateness of certain environmental structures, and underscore the social impact of such a dramatic event, that upon review was truly a predictable tragedy.

This presentation will impact the forensic community and/or humanity by demonstrating how in spite of the tragic event, people continue to live in "the caves", in a condition of absolute poverty and in contrast of every safety rule. In all likelihood, just a few precaution safety measures could have avoided the dramatic event and could prevent a repeat collapse of these types of buildings.

A human made, level I disaster, occurred with the collapse of a building in the historical center of Foggia, a city in the South of Italy. In this location, some families still live in small, tall, and rundown buildings of usually two floors tall. These buildings were built in the very early 20th century, usually above a basement, three meters underground, named by the town citizens as "the caves." These basements are composed of one or two rooms and a small bathroom, with poor lighting and even worse ventilation, with just a small window for an entrance, accessed by stairs. The "caves" were generally intended for storage, but have often hosted people, usually elderly.

During the night of the 20th of November 2004, at 3:15 a.m., a onefloor building over one a "cave" suddenly collapsed. Of the 14 people living in the building at the time, six were found alive within a few hours after the collapse and were immediately transported to the local hospital. Eight bodies were recovered lifeless from the building, and none were missing.

Soon after the disaster, the local legal authority engaged a team composed of forensic pathologists and engineers to investigate the causes of death and the cause of the building collapse. Engineers' investigations discovered that the cause of the collapse was due to the accidental explosion of a domestic gas cylinder originating from a cave. Scene investigations also revealed irregular gas network connections in spite of standard safety rules.

Three working areas were designated early as medicolegal facilities. A provisional holding area was used to receive dead bodies coming from site of collapse prior to examination allowing family members to be able to identify the victim. A second private viewing area was designated to let family members and friends see photographs of the bodies, objects pertaining to the deceased (jewelry, clothing or identifiable objects found), and finally, the bodies themselves, carried from the holding area. An examination space was designated to conduct a more detailed exterior assessment of the body to provide a careful external examination, and to perform a complete autopsy in order to determine the cause of death, documenting injuries sustained, and determining activities at the time of the collapse.

According to the most advanced disaster preparation guidelines, injuries were coded using the Abbreviated Injury Severity Scale and its derivative Injury Severity Score (ISS). The AIS is a comprehensive taxonomy of individual injuries, which denoted body region, type of anatomic structure and severity of injury. The severity index ranged from 0 (no injury) to 6 (unsurvivable injury), the ISS estimated overall body trauma and was calculated by squaring and summing the single highest AIS score in each of the three most severely injured body regions. An ISS score of 76 was indicative of unsurvivable injury. A complete radiographic study of each body was performed.

Cranio-facial injuries, cranial fractures, sternum and multiple ribs fractures, upper and lower limbs fractures, spine fractures and vertebral subluxations, multiple diaphragm lacerations, multiple lacerations and contusion of internal organs (heart, lungs, kidneys, liver and spleen) were detected in a first group of persons represented from the "cave man" group, and the family living immediately above the cave. The second group was composed of three persons in the family living very close to the source of explosion, and presented with only mild to no traumatic injury. People belonging to the first group died quickly, due to the severity of their injuries. The people in the second group died from mechanical asphyxia.

Cave, Building Collapse, Injury Severity Score

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