



Pathology/Biology Section - 2016

H97 Forensic Botany: Judicial or Circumstantial Evidence? A Case Report and Review of the Literature

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After attending this presentation, attendees will understand the impact of forensic botany on crime scene investigation.

This presentation will impact the forensic science community by demonstrating the importance of judicial evidence that comes from the use of forensic botany.

Forensic botany is a discipline which uses the knowledge of botany as an aid in solving the crime. The important presence of plant species can be very useful in forensics as plant science can be used as evidence in court. Forensic science encompasses many subdisciplines. It can be subdivided into several botanical subspecialties, including plant anatomy (the study of cellular features), plant systematics (taxonomy and species identification), palynology (the study of pollen), plant ecology (plant succession patterns), and limnology (the study of freshwater ecology). Plant species identification can determine the geographical origins of a sample, provide links between a crime scene and suspects, and test alibis. Plant evidence can be useful to determine if a death is due to an accident, suicide, or homicide or in determining what time of year a burial may have taken place.

Case Report: This forensic case illustrates the importance of botanical evidence that specifically had been collected from clothes of the victim who was found dead in dubious circumstances. This report is the case of a man of Romanian nationality who arrived at the hospital in serious medical condition due to electrical injuries and died a few hours after his arrival. His wife reported that he was repairing a chandelier in the house when he was electrocuted, fainted, and consequently fell from a ladder. Investigators and a forensic pathologist did not believe this version of events and performed an inspection of the house and an autopsy. During the inspection, a ladder with rubble and blood stains on the ground were discovered. This blood was analyzed. Consequently, the autopsy showed the presence of small vegetal elements on the head and clothes of the subject. These vegetal elements were identified as *Xanthium spinosum*, an herbaceous plant belonging to the family *Asteraceae*, with characteristic spiny fruit. The body presented with severe burns and areas of skin necrosis on the arms, trunk, and left leg. Furthermore, a head injury with areas of brain hemorrhage and fractures of the skull base were identified. The histological examination revealed that the passage of electricity had generated dermal necrosis. Therefore, the size of the lesions detected were not compatible with an electric shock by low voltage. Even with the results of the autopsy regarding the cause of death, the manner of death, and the circumstances in which it had occurred, the case remained unsolved. As a result, a survey was performed on the botanical elements detected during the external examination of the body. The botany survey analyzed the nature of the plant matter found on the clothing. The typical habitat of *Xanthium spinosum* is the uncultivated and arid ruderal areas. The favorite substrate is both calcareous and siliceous with pH neutral and high nutritional values of the soil which should be dry. In many areas, it is considered an invasive weed. In the mountains, these plants can be found up to 1,000m, but their presence is especially noticeable on hilly areas, plains, and plains at sea level. An analysis of the origin of these botanicals was connected to a specific geographical area of the place where the investigators focused their survey to get more results. The limits of the geographical area allowed for the clarification of the dynamics of events. Investigators identified the trellis of a high-voltage powerline on which the man, trying to steal copper from electrical cables, was electrocuted and thrown to the ground by the shock. When he fell, the botanical elements attached to his clothes and helped investigators distinguish between the primary real crime scene and the secondary fictitious scene developed by relatives (who were later arrested) in order to conceal the theft of copper.

Conclusions: In conclusion, crime scene evaluation is necessary to preserve and collect the features of the crime scene in order to show the relationship of that evidence to the overall scene and to other evidence.

Forensic Science, Forensic Botany, Evidence