G64 Cases of Psychiatric Diseases and Forensic Entomology

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After attending this presentation, attendees will learn novel information about how the preservation techniques (clothes, cosmetic clay, perfumed oils) can affect the body colonization by insects and the PMI_{min} estimation in cases of bodies preserved by family members affected with psychiatric diseases.

This presentation will impact the forensic science community by demonstrating the importance of a correct crime scene reconstruction focusing on the preservation and conservation techniques used to avoid body decomposition while waiting for the resurrection.

The conservation of the body of a dead family member, typically a parent, while waiting for the resurrection or because of fear of the lost is often associated with psychiatric diseases or with religious convictions. This presentation addresses three cases that occurred in Italy, where three sons with psychiatric diseases or depressive syndromes watched over their dead mothers for weeks. In all cases, entomology was the only approach useful for an estimation of the time since death (minimum Postmortem Interval (PMI_{min})).

At the end of August 2011 in Vibo Valentia, Calabria, the dead body of a 92-year-old woman was found on her bed, dressed in pajamas, and covered by several blankets; the window of the bedroom partially open. The body was in a partially mummified state, with the face and the neck completely skeletonized. No sign of injuries was observed during the autopsy. Due to the poor preservation of the tissues and organs, the cause of death was difficult to establish despite the previous symptoms of cardiac disease. Six species of flies (*Lucilia sericata, Chrysomya albiceps, Hydrothaea capensis, Sarcophaga sp., Piophila casei,* and *Megaselia scalaris*), four species of beetles (*Necrobia ruficollis, Dermestes frishii, Dermestes undulates,* and *Aleochara sp.*), and two parasitic wasps (*Nasonia vitripenis* and *Brachymeria podagrica*) were collected from the recovery scene and during the postmortem examination. The insects' developmental stage correlated with a temperature reconstruction (data logger placed into the bedroom for 5 days) is consistent with an estimated PMI_{min} of 17-23 days. This data is in agreement with the last time the woman had a telephone call from the other son's wife 19 days prior to the discovery of the body.

In April 2012 in Bisceglie, Apulia, a 97-year-old woman was found dead on the floor of her kitchen. Heaters were switched on, thus warming the house to 20°C (68°F). All the windows and entrance doors were sealed. The body was clothed in pajamas and was partially wrapped in several blankets. A low number of active larvae and pupae surrounded the corpse, which was in an advanced state of decomposition and pre-mummification. The face and neck region were covered by a mask of a greenish substance, similar to a powder found in many stoppered glass jars found on the scene. Additionally, a mixture of essential perfumed oils was abundantly used on the body. A complete autopsy excluded traumatic causes of death and revealed severe ischemic heart disease with 90% coronary artery occlusion. The chemical analysis of the white crystals found on the body revealed that they were coarse table salt granules and the grainy powder was recognized as cosmetic clay. The entomological investigation revealed the presence of two different species of *Diptera*, namely *Calliphora vicina* and *Fannia canicularis*, that allowed a PMI_{min} estimation of 25-30 days.

At the beginning of July 2013 in Livorno, Tuscany, the dead body of an 89-year-old woman was found on her bed, dressed in a nightshirt and nightgown. The window of the bedroom was partially open. Several adult diapers, soaked with decomposition fluids were also present on the bed. The body was lying supine in advanced decay with the face and the forearms partially mummified. No sign of injuries was observed during the external examination of the body and the autopsy revealed severe calcific coronary artery atherosclerosis. Pupae and larvae of *Megaselia scalaris*, *Lucilia sericata*, and *Protophormia terranovae* were collected from the body and the bedroom, allowing a PMI_{min} estimation of 15 days.

The difference in the fauna composition and in the number of species in these cases can be related mainly with accessibility to the bodies (windows partially open vs. windows sealed), the season (summer vs.

spring), and the methods utilized in order to preserve the bodies (only blanket and clothes vs. cosmetic clay and perfumed oil).

PMI, Indoor Cases, Forensic Entomology

