THE USE OF INSECTS TO ELUCIDATE TIME OF DEATH AND SUSPECTS ASSOCIATION TO THE SCENE CRIME: THREE CASE REPORT IN RURAL AND URBAN AREAS OF SOUTHERN BRAZIL

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INTRODUCTION

One of the most topic of Forensic Entomology is the use of developmental and ecological data of necrophagous insects to estimate the post-mortem interval (PMI) in criminal investigations[1]. It because allow the police officers to include or exclude probable suspects to a homicide case[2]. In Brazil, entomological evidence is still neglected by the police officers who attend crime scenes, so cases involving the use of insects to estimate the PMI are rare.

In three occurrences of encounter of cadaver assisted by a unit of the Institute of Criminalistic (IC), we report here that specimens of dipterans which colonizing the corpses were useful in the elucidation of the cause and manner of death in the municipality of Franca, State of São Paulo, Brazil.

CASES REPORT

1st CASE – Natural death vs. murder: A naked woman's body in the process of decomposition (Fig.1) was found with no apparent marks of violence. The victim lived alone and its IPM was estimated at 7 days. At necropsy bone fractures or lethal injuries were not found, and history of heart disease led to a diagnosis of natural death. However, an opening in the roof of the house and larval mass at the nape of the victim (Fig.1) called the attention of the criminal expert, which took into account that this was not an area for elective primary larval colonization. Thus, an exhumation was requested and opened an investigation to clarify the fact. A suspect was arrested and in light of the evidence admitted having accepted a blow to the nape of the victim who collapsed during attempted rape. The exposed superficial wound attracted the larvae identified as *Chrysomya albiceps*[3], which through biological data[4] corroborate the PMI 7 days.

2nd CASE – Suicide *vs.* murder: Man taken by the family as missing for 7 days was found hanged without complete suspension in a rural area (Fig.2). Corpses in this condition no show an usual process of decomposition and the estimation of PMI become less accurate, when based only on cadaveric phenomena. Eggs and 3rd instar larvae were collected and transported to the lab. Both specimens of *Hemilucilia semidiaphana* (n= 24) and *Chrysomya albiceps* (n= 228) emerged after 12 days. Literature[5] indicates that the full development of *H. semidiaphana* at 25°C amount to 16 days. Adopting this reference time and considering the range observed in the laboratory reached to 4 days PMI. This information required prolongation of the police in investigations and new efforts revealed that the victim was accompanied by suspects 5 days before the encounter of the body. Thus, the nature of the occurrence, which had been typified as suicide, converged for homicide with criminal intent.

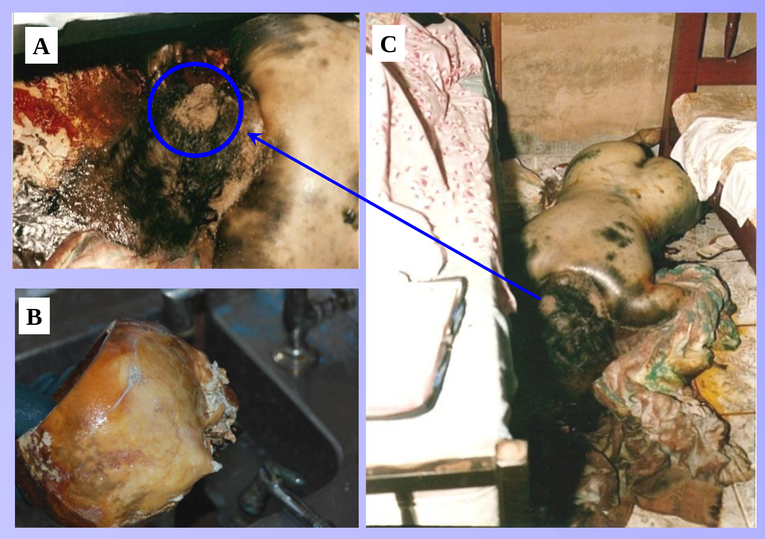

Fig. 1. Maggot mass at the nape of the victim (A) indicating that there was an antemortem injury that attracted insects for colonization. The absence of fracture (B) and the advanced state of decomposition (C) were obstacles to the correct diagnosis of cause of death.

Fig. 2. Position of the victim's body (A) and detail of the nack (B). The estimation of PMI was based on the biological data of *Hemilucilia semidiaphana* (C), dipteran of Calliphoridae family.

Fig. 3. Body inside an abandoned house and in detail *Chrysomya albiceps* used for estimating the PMI.

3rd CASE – Murder *vs.* natural death: Body of homeless found inside an abandoned house (Fig.3) was last seen alive in the company of another person. Thus, an accurate estimate of the IPM was relevant to dispel suspicions of murder. Third instar larvae that colonize the body were collected and sent for laboratory, which emerged after 14 days when it was identified as *Chrysomya albiceps* (n= 10). According to data from the literature[4,6] this species reaches its full development in 18 days at 23°C. Four days PMI confirms a natural death and not murder.

References

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