A136 The Differential Rate of Human Decomposition in an Enclosed Vehicle Compared to an Outdoor Environment

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Learning Overview: After attending this presentation, attendees will understand the difference in the postmortem interval between human cadavers decomposing inside a vehicle and control cadavers in similar body positions but located outdoors. Attendees will learn about the factors contributing to the faster rate of decomposition in the control cadavers.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by presenting new postmortem interval data, including factors that affected the rate of decomposition between the two environments and the differences in gross appearance throughout the decomposition process.

There is controversy within the literature regarding different rates of decomposition and whether decomposition occurs faster or slower in indoor or outdoor environments. Voss' study, using pig carcasses, showed that carcasses inside a vehicle decomposed faster than the outdoor carcasses due to environmental factors, including higher temperatures in the vehicle.[1] Because decomposition varies between humans and animals, the present study explored if this would be true for human cadavers. This study compared the decomposition rate of two cadavers in a closed vehicle, with two control cadavers in an outdoor surface environment. The cadavers in the vehicle were placed with one in a sitting position in the driver's seat, and one in a loosely flexed position in the trunk. Two control cadavers were placed in similar body positions outdoors. Photos were taken daily until the advanced decomposition stage was reached, then taken weekly thereafter. Physical descriptors for southeast Texas, developed by Bytheway et al. were used to estimate the stage of decomposition for each cadaver.[2] Results showed that the control cadavers (CAD 3 and 4) went through the fresh and early stages of decomposition faster than the experimental cadavers (CAD 1 and 2). CAD 1 was in the driver's seat of the car and CAD 3 was in an upright position in a chair outdoors. For the Fresh stage of decomposition, CAD 3 progressed one day faster than CAD 1. CAD 3 also decomposed faster in the Early stage of decomposition by three days. A similar trend was observed with the trunk control (CAD 4) decomposing faster in the Fresh stage by 1.5 days compared to CAD 2. In the Early stage, CAD 4 decomposed approximately 2.75 days faster than CAD 2. The experimental cadavers remained in the Advanced stage of decomposition for the remainder of the study (365+ days). The control cadavers took approximately 152 days to reach skeletonization.

Reference(s):

1. Voss S.C., Forbes S.L., Dadour I.R. Decomposition and insect succession on cadavers inside a vehicle environment. *Forensic Sci, Med, and Patho* 2007. 4(1); 22-32, doi:10.1007/s12024-007-0028-z.
2. Bytheway et al. (unpublished 2018).

Forensic Taphonomy, Human Decomposition, Vehicle

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