



Physical Anthropology Section - 2012

H16 Decomposition Pattern and Rate in Hanging Pigs

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After attending this presentation, attendees will understand the major differences in the decomposition patterns and rates between hanging pigs and those decomposing on the ground.

The presentation will impact the forensic science community by adding to the knowledge concerning decomposition in hanging bodies carried out under controlled conditions and by providing a scale analogous with Megyesi, et al. for scoring hanging bodies which, combined with accumulated degree days (ADD), will allow for the calculation of time-since-death.¹

Establishing the postmortem interval (PMI) is an essential part of any death investigation. Critical to establishing PMI is an understanding of the process of decomposition. Using decomposition scoring and ADD, the PMI can be calculated for bodies. The scoring tables currently used have been prepared from bodies lying in contact with a surface. There is little data for the decomposition pattern in hanging bodies² and previously there has been no scale for scoring hanging bodies that compares with the total body score (TBS) scale introduced by Megyesi, et al.¹

The findings of a decomposition study carried out under controlled conditions at TRACES (Taphonomic Research in Anthropology: Centre for Experimental Study), University of Central Lancashire, United Kingdom will be presented. Twenty freshly killed pigs (*Sus scrofa*) of the same age and weighing between 19.5kg and 57.0kg were used as human analogues. Ten pigs were hung by the neck using nylon rope attached to hooks hung from an A-frame of scaffolding poles. The animals were between 60 and 90cm distance apart with their hind feet approximately 100cm off the ground at the start of the experiment. To protect the pigs from vertebrate and avian scavengers, the A-frame was surrounded at the bottom with chicken wire to a height of 60cm above ground, and bird netting was stretched over the whole frame. A further ten control pigs were placed on the ground and covered with chicken wire cages to protect them from scavengers.

The pigs were observed and the pattern of decomposition recorded and photographed for head and neck, torso, and limbs at approximately 50 ADD intervals until 932 ADD (the end of the study period). Continuously recording data loggers, set to take temperature readings at six-hourly intervals, were used to measure the ambient and internal temperatures. Total Body Score (TBS) score was assigned to the control pigs at each visit using the existing Megyesi, et al. scale.¹ The hanging pigs were weighed at seven and eight day intervals throughout the experiment to compare the percentage body weight loss between the males and females.

As the TBS system was constructed using bodies in contact with the ground and not hanging, a new scale for hanging bodies analogous with Megyesi et al.'s was constructed using the observations and photographs from the study. This enabled the assigning of a Total Hanging Body Score (THBS) to each of the hanging pigs, and allowed a direct comparison to be made with the control pigs when looking at rates of decomposition as a function of ADD.

In the control animals the pattern of decomposition showed no differences between the sexes. For the hanging pigs; however, the post bloat body shape was markedly different for males and females. Females retained an equally swollen rectangular shape throughout the length of the torso with an evenly swollen profile. Swelling in the males centered around the mid-torso being at its greatest width around the umbilicus and penis.

As decomposition progressed, the hanging males and females displayed differences in the expanded anal opening. Initially in both sexes the anus opened to a diameter of approximately 10cm. In the males the back of the scrotal sack subsequently "gave way" and merged with the perforated anus producing a large clear hole directly below the hanging pig from which the bones dropped. The females remained swollen for longer with a pouch of stretched skin forming below and to the front of the anal opening.

While there initially appeared to be differences in the rates of decomposition between the sexes in the hanging pigs these are not statistically significant.

The new scale for hanging bodies will be presented together with photographs of the differing decomposition patterns.

References:

1. Megyesi MS, Nawrocki SP, Haskell NH. Using accumulated degree-days to estimate the postmortem interval from decomposed human remains. *J Forensic Sci* 2005;50:618-26.
2. Shalaby OA, deCarvalho LM, Goff ML. Comparison of patterns of decomposition in a hanging carcass and a carcass in contact with soil in a xerophytic habitat on the island of Oahu, Hawaii. *J Forensic Sci* 2000;45:1267-73.

Hanging, Decomposition, Score