G102 Starvation – Interpretation of Morphological Findings and Pitfalls

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After attending this presentation, attendees will learn how to interpret the morphological findings in cases of starvation.

This presentation will impact the forensic community and/or humanity by helping to avoid the misinterpretation of the morphological findings in cases of starvation by demonstrating the classifications of malnutrition and potential pitfalls in its diagnosis.

Starvation is still a worldwide and every day problem. A high infant mortality exists in many Asian, African and some Central and South American states, which is directly explainable by hunger and its aftereffects. In European and North American countries cases of death from starvation are rare, but nonetheless, are not unknown in the forensic pathology literature. Actually, illness resulting from wealth and overfeeding are much more prevalent.

Nowadays, cases of death due to starvation originate, in general, from physical or psychical diseases, from food refusal or food deprivation. The latter cause of intentional food depravation of a child being in most cases a sign of child neglect punishable by the law.

Starvation due to consumptive illness resulting from serious natural disease, such as cancer, is always related to the original natural disease. Deaths caused by malnutrition are cases of unnatural death.

Under-nutrition can be classified in certain stages. According to the Gomez-Classification the body weight of a malnourished individual is compared to the expected weight of an individual of the same age. The categories mild, moderate and severe malnutrition is based on a body weight of 75 to 89%, 60 to 74% and <60%, respectively, of the expected body weight. With this classification it is difficult to interpret the correct bodyweight of children. Because of the different growth rates of children, in these cases of suspected starvation, the Waterlow classification (Table 1) should be used. The chronic growth retardation of a child can be assessed by comparing the measured height of the body with the expected height. Then the weight of the individual is compared with the expected weight of the body corresponding to the actual height to assess the actual state of under or malnutrition.

Growth Retardation (Chronic) Height (% of the expected height at a defined age)	0 normal > 95	1 mild 95 – 87	2 moderate 87 – 80	3 severe < 80
Protein-Energy-Malnutrition (Acute) Weight (% of the expected weight at a defined age dependent on the actual height)	0 normal > 90	1 mild 90 - 80	2 moderate 80 - 70	3 severe < 70

In this study, cases of starvation were evaluated to point out the difficulties in interpretation of body weight and weight of internal organs and to demonstrate potential pitfalls in this analysis.

The following conclusions can be drawn from this analysis:

- The suspicion of death through starvation becomes evident at first sight.
- The real cause of starvation has to be confirmed by numerous examinations (autopsy and histology and toxicology).
- The autopsy of the body includes the determination of all measurable parameters (height, body weight, organ weight), as well as photo documentation.
- Verification of the development of the child at an early age and from birth on is necessary.
- Investigation by the police of the responsible caretakers for the child, and their responsibility in the starvation, must be carried out.
- Under certain circumstances, such as suspicion of a rare chronic disease, a pediatrician can be consulted for their expert opinion.

Starvation, Waterlow Classification, Malnutrition

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