E18 Maggot Length Versus Rice Length: Finding a Possible Correlation

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After attending this presentation, attendees will understand the critical importance of collecting the very small fly larvae from living patients and will have a greater understanding of elements of fly myiasis.

This presentation will impact the forensic science community by identifying the necessity of requiring immediate collection and preservation of insect evidence in health and elder care facilities for determining physical neglect/abuse through insect fly species identification in human myiasis cases.

Seldom, if ever are maggots (fly larvae) collected, photographed, or preserved for evidential or scientific purposes when medical personnel discover these organisms present on patients under their care. Entomological evidence, usually maggot infestations, is commonly used to identify a period when abuse or neglect may have occurred, and thus relevant and material to judicial proceedings. In elder care facilities a person may be found infested with necrophorus (feeding on dead tissues) or filth flies (house fly relatives) larvae, but in many of these cases the medical care givers fail to collect specimens from these insect infestations observed on their patients. The condition is known as human insect myiasis. Specifically, human myiasis refers to the infestation of fly larvae on living humans and includes the blow fly, flesh fly, house fly, and other groups. Case examples from nursing homes and elderly patient facilities will be used to illustrate the seeming lack of concern over patients having insect infestations. The only description given in several of these cases where specimens and photographs of specimens were absent was the larvae were white and about the size of a grain of rice. Therefore, analogous description of maggots to rice needed to be qualified and quantified.

A research study was initiated to determine the size of an average rice grain and found that grains of rice from different sources, as well as within sources, vary in size. A variety of commercially available brands and types of uncooked rice were purchased from a local grocery store and a Chinese restaurant. The three brands from the local grocery store were, enriched long grain white rice, whole grain brown rice, and medium grain white rice. The fourth brand, extra long rice, was served at the local Chinese restaurant.

A small portion of rice was placed into separate petri dishes for measurement of individual sample grains. Intact grains of rice were removed for further observation (as opposed to broken pieces). Two hundred grains of rice were measured from each brand. Of the 800 grains of rice measured, the total length ranged between 4.3mm to 7.5mm with mean lengths per treatment between 5.21mm to 6.33mm. The rice length data were then compared to the fly larvae length of known myiasis agents and was found to most represent larger mature second stage larvae or even early third stage larvae from the blow fly group, or older larvae of some “gnat size” fly larvae groups. The perception of most people would be that a grain of rice is relatively small when compared to a string bean, a carrot, or an ear of corn. Thus, it is obvious that the description provided by the observer is relative to an object being small and is not definitive of the life stage or size of maggots observed. This research demonstrates that a grain of rice may not be as small as perceived and if taken literally may be drastically misleading to the forensic entomologist who is trying to evaluate the age of the insect larvae.

Even though generalized visual descriptions cannot provide a specific entomological identification, use of a “rice grain” analogy may provide a contextual description referring to a larval specimen which is quite small. It is incumbent upon medical personnel and health care facilities to incorporate mandatory insect specimen collection, (photographs and preservation) in their SOP manuals and regulatory routines. Failure to collect and preserve insect evidence in health and elder care facilities must be rectified.

Maggot Length, Rice Length, Maggot Identification

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