H129 Myiasis and Death: Factors and Complications Related to Estimating Time of Colonization After Antemortem Fly Colonization Followed by Death

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After attending this presentation, attendees will be able to assess fly colonization for potential myiasis, determine underlying medical conditions that may predispose a decedent to myiasis, and understand the limitations myiasis may impose on a time-of-colonization estimate for approximating the postmortem interval.

This presentation will impact the forensic science community by illustrating how combining forensic entomology and forensic pathology can help: (1) elucidate the complicated nature of these cases; (2) provide valuable information related to the timing of injuries and the potential of antemortem abuse or neglect; and, (3) unravel unknown medical histories of decedents.

Myiasis, or fly colonization of the tissues of living people, is commonly associated with pre-existing cutaneous lesions resulting from natural disease or wounds or in some cases by accident.[1-4] Fly development is coordinated by temperature, with warm temperatures resulting in faster growth and cooler temperatures resulting in slower growth, with each species responding differentially to a given temperature regime. The procedure for estimating the timing of fly colonization requires some knowledge of the temperatures experienced by the developing larvae. Therefore, in the case of living individuals, body temperature is used to approximate development temperature, whereas in deceased individuals, ambient temperature is used. In cases of myiasis that occur shortly before death, this dichotomy is not so clear. Furthermore, when one considers the medical history and types of cases where myiasis is known to occur (e.g., wounds, known history of gangrenous limbs, decubitus ulcers), normal body temperature may not be an appropriate temperature history to apply to time-of-colonization calculations.

In this presentation, three cases will be used to illustrate how myiasis can be recognized in decedents, what types of medical history might suggest myiasis rather than postmortem colonization, and what limitations this uncertain temperature regime might have on not only time of colonization but postmortem interval estimation. These three cases illustrate that colonization typically occurred when flies had ready access to the body (e.g., ailing decedent found outdoors), that it was observed when the development of the fly larvae was more advanced than would be expected based on the state of, or lack of, decomposition, and occurred in association with medical conditions, such as diabetes mellitus, gangrene, or trauma with sepsis. Cases of myiasis associated with limbs and infections may not be accurately represented by normal body temperature, as in cases of reduced circulation or infection. Perhaps most significant in using the information from the time-of-colonization estimate is the dissociation between the fly colonization event and death, therefore rendering the time-of-colonization interval not representative of postmortem interval but indicative of other events.

Reference(s):

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2. Sherman R.A. Wound myiasis in urban and suburban United States. *Arch Intern Med.* 2000;160(13):2004–14. Available from: http://archinte.jamanetwork.com/article.aspx?articleid=1729688.
3. Carpenter T.L., Chastain D.O. Facultative myiasis by *Megaselia* sp. (Diptera: Phoridae) in Texas: A case report. *J Med Entomol.* 1992;29(3):561–3.
4. Kandi V., Lal S.K., Shruthi A., Sandhya K., Simar H., Pranuthi M., et al. Persistent pediatric gastro-intestinal myiasis: A case report of fly larval infestation with *Musca domestica* with review of literature. *J Glob Infect Dis.* 2013;5(3):114–7.

Calliphoridae, Maggots, Wounds