Comment on Davis and Holcomb: “Intraerythrocytic inclusion bodies in painted turtles (*Chrysemys picta picta*) with measurements of affected cells”

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Dear Editor,

We are writing regarding the recently published article by Andrew Davis and Kerry Holcomb (2008) entitled “Intraerythrocytic inclusion bodies in painted turtles (*Chrysemys picta picta*) with measurements of affected cells”. In our diagnostic pathology services we see intraerythrocytic inclusion bodies similar to those described in this article in multiple reptile species, particularly in turtles. We have understood these structures to be iron organelles, which are phagocytizing ferric iron that is not needed for incorporation in the hemoglobin molecule. In our laboratory these structures stain brightly positive with the Perl’s (Prussian blue) reaction, indicative of ferric iron.

Though published findings on this subject are few, we would like to direct the authors’ attention to several articles suggesting that these structures are degenerate organelles, rather than infectious agents, as suggested in the authors’ introduction. Richey et al. (2000) describe similar basophilic, intraerythrocytic structures and demonstrate with transmission electron micrographs that they are degenerate, ferritin-containing organelles. In an article by Alleman et al. (1992), similar intraerythrocytic structures were determined ultrastructurally to represent degenerated

organelles, possibly mitochondria. Finally, Clark et al. (2001) described basophilic intraerythrocytic inclusions and used transmission electron microscopy to demonstrate that the inclusions were composed of aggregated endoplasmic reticulum.

While Dr. Davis and Dr. Holcomb have excellently quantified the prevalence of inclusions and the size of cells that contain them, we are concerned that neither special stains nor electron microscopy were utilized to support their assumption of a viral etiology. The introduction and references were limited only to infectious causes. The article characterizes the affected cells as more mature erythrocytes, consistent with the hypothesis that these structures are organelles degrading substances, including iron, that are no longer needed for incorporation into hemoglobin. We would be interested in Dr. Davis and Dr. Holcomb’s thoughts on our alternative hypothesis, and are curious regarding the results of iron stains on their blood smears.

References

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