VARANUS ACANTHURUS (Ridge-tailed Monitor)
SPONTANEOUS PNEUMOPERITONEUM.

Although well documented in mammalian veterinary literature (e.g., Williams et al., 1983; Probst et al., 1984; Lonsdale and Richardson, 1999; Mellanby et al., 2002; Lykken et al., 2003; Saunders and Tobias, 2003; Itoh et al., 2005), pneumoperitoneum, the retention of gases within the abdominal cavity, has not received much if any attention in reptiles. Furthermore, when compared to other squamate groups frequently maintained in captivity, particularly iguanids, few veterinary reports on afflictions affecting monitor lizards exist (e.g., Zwart and Harshbarger, 1972; Friend and Russel, 1979; Jacobson and Kollias, 1986; Gamble and Hartdegen, 2000; Arnbjerg et al., 2002; Hetzel et al., 2003; Bertelsen and Weese, 2006). Documentation of health complications in captivity may therefore be valuable to the advancement of herpetological husbandry, medicine and surgery. A case of spontaneous pneumoperitoneum in a captive-bred juvenile Ridge-tailed monitor *Varanus acanthurus* is reported here.

Three juvenile Ridge-tailed Monitors, *V. acanthurus* were delivered to the author via overnight domestic shipping. Despite being cold, upon initial inspection all three monitors appeared to be in good physical condition. The group was immediately set up in an enclosure which offered a temperature gradient ranging from 24° C to a basking temperature in excess of 54° C. Once their body temperatures had warmed up, all three monitors became very active, inspecting their surroundings, digging burrows, defecating, and even exhibiting pseudo-copulatory behavior with one another.

Approximately ten hours after arrival one of the juveniles (8.6 cm SVL; 21.4 cm total length) had become noticeably distended in the abdomen, and was seen basking for extended periods ( > 5 min at a time). Upon closer inspection, it was evident that the monitor was bloated with gas, rather than food or fluid (Figures 1 & 2). The distention become so pronounced that the monitor was unable to rest in a natural position, and all roaming activity ceased. Likely an effect of the pressure buildup within the
abdominal cavity, the *V. acanthurus* appeared to be experiencing difficulty breathing, occasionally gasping or ‘gulping’ air (ca. once per minute). No attempts to relieve the pressure buildup were made that day. The basking light was left on overnight to provide continuous access to a basking spot, in hopes that the monitor could recover from this malady.

The monitor was found dead the following morning, rolled over onto its side. The abdomen was turgid (Figure 3). Judging by the limpness of the limbs, the monitor had apparently died shortly before its detection that morning, and rigor mortis had yet to set in.

Using a scalpel, a small, shallow incision made through the skin and musculature of the abdomen resulted in immediate deflation of the abdomen (Figure 4). Upon dissection, no noticeable signs of stretching, blockage, ulceration, or damage to the intestines or stomach were detected, suggesting that the gases were retained within the peritoneum and not the intestines. No perforations in the intestinal lining were noticed. Despite being fed three days prior to its delivery, the stomach contained a substantial amount of undigested food matter (crickets), and little digested material was present within the intestines. Based on observations of the rapid digestive rates (usually within 24 h of ingestion) of healthy juvenile *V. acanthurus* in captivity, it would appear as though the digestive system of the deceased monitor had been compromised. Whether this had any bearing on the pneumoperitoneum remains unknown.

Pneumoperitoneum is a generalized term used to describe the buildup of gases within the peritoneum. Acute, or spontaneous pneumoperitoneum, as seen in this *V. acanthurus*, can have many possible underlying causes in mammals, including bacterial infection (Probst et al., 1984), gastric ulcer (Lykken et al., 2003), bladder rupture (Saunders and Tobias, 2003), neoplasia (Saunders and Tobias, 2003), and gastric perforation (Mellanby et al., 2002; Itoh et al., 2005). It remains to be seen whether reptiles, and more specifically squamates, have the same susceptibilities to pneumoperitoneum as mammals. Although the dissection carried out was inconclusive in determining the causative agent or source of the gases retained by the *V. acanthurus*, it is possible, given the diminutive size of the individual, that a bacterial infection or minor perforation may have been overlooked.

Of interest was the acute onset of symptoms which intensified over the course of several hours. Earlier surgical intervention by perforating the perineum may have temporarily alleviated symptoms, particularly
breathing difficulties, however it is unlikely that simple alleviation of the pressure within the abdominal cavity would have remedied the underlying cause of the pneumoperitoneum, especially if bacterial infection or severe perforation of the stomach or intestines were responsible.

Despite being raised and shipped together with the afflicted individual, and housed together while symptoms appeared, the two accompanying *V. acanthurus* remain unaffected and healthy.

**Literature Cited**


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