

## Secondary hepatogenous photosensitization in a llama (*Lama glama*) bred in the state of São Paulo, Brazil

Eduardo Harry Birgel Junior, Maria Caroline dos Santos, Janaina de Arruda Camara Ramos, Fabio Celidonis Pogliani, Danielo Becker Birgel, Alice Maria Melville Paivo Della Libera, Lilain Gregory, Wanderley Pereira de Araujo, Fernando José Benesi

The occurrence of secondary hepatogenous photosensitization associated with pastures of *Brachiaria decumbens* date from the mid 70s (1). Since then, many outbreaks have been described in cattle, water buffaloes, sheep, and horses (1).

The only reports of photosensitization in camelids have been those of Rosychuk (2), who described hepatogenous photosensitization in llamas, and Coulton et al (3), who reported the occurrence of secondary hepatogenous photosensitization in alpacas in Australia due to exposure to the mycotoxin sporidesmin.

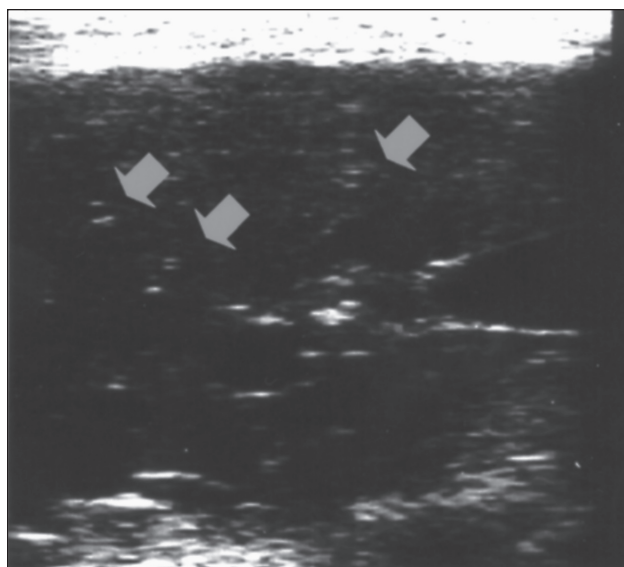
In the last 2 y, the frequency of ruminants being affected by photosensitization has increased in the ruminant practice at the Faculdade de Medicina Veterinária e Zootecnia, Universidade de São Paulo, and there has been a significant increase in the diagnosis of the disease in sheep — in 2003, 5.7% (14/244) of the sheep sent to the service were diagnosed as having secondary hepatogenous photosensitization.

Among the animals with photosensitization, an adult female llama (*Lama glama*) was sent to the service in August 2003. The animal had a history of apathy, anorexia, and weight loss, and had been kept on a *Brachiaria decumbens* pasture.

Apart from a decrease in ruminal movements, the other vital signs (heart rate, respiratory frequency, and body temperature) were within the normal range. On clinical examination, the ocular mucus membranes were slightly yellow and the skin in nonpigmented areas was swollen. After 10 d, the animal showed mummification of the skin over the head (Figure 1). The leathery surface and scaling were characteristic of solar dermatitis. Rosychuk (2), in describing photosensitization in llamas, emphasized the presence of erythema and edema in various degrees and of scaling restricted to nonpigmented areas of the skin, predominantly in the head. According to Coulton et al (3), there may be abdominal distension, fever, and a reduced quantity of feces.



**Figure 1.** Skin lesions with mummified appearance due to photosensitization.



**Figure 2.** Ultrasonographic image of the liver. The arrows show thickening of bile canaliculi.

Clínica de Bovinos — Centro de Pesquisa e Diagnóstico de Enfermidades de Ruminantes, Faculdade de Medicina Veterinária e zootecnia/USP, 05508-900, São Paulo — S.P., Brazil (Birgel, Pogliani, Birgel, Libera, Gregory, Araujo, Benesi); Criadouro Conservacionista de animais Selvagens Rancho das Hortênsias, Tapiraí — S.P., Brazil (Santos, Ramos).

Address all correspondence and reprint requests to Dr. Birgel Junior; e-mail: ehbirgel@usp.br

Biochemical analyses revealed increased values of aspartate aminotransferase (319 U/L, normal range, 100–250 U/L [4]), gamma glutamyltransferase (313 U/L, normal range, 5–29 U/L [4]), direct bilirubin (6.33  $\mu\text{mol/L}$  normal range — no reference value available) and total bilirubin (7.69  $\mu\text{mol/L}$ , normal range, 0.0–1.71  $\mu\text{mol/L}$  [4]), similar to those reported by Coulton et al (3). After 30 d, associated with recovery of

the animal, serum levels of these biochemical parameters had returned to normal.

Ultrasonographic visualization of the liver with a 5 MHz transducer was possible between the 10th and 11th right intercostal spaces. Small hyperechoic points, characteristic of organ congestion, were observed diffused in the hepatic parenchyma and associated with the thickening of bile canaliculi (Figure 2). In the morphometric evaluation of the liver, the following characteristics were measured: size of the liver — from 10.0 to 11.0 cm; thickness of the liver — from 6.5 to 7.5 cm; angle of the ventral edge — from 46 to 49°; diameter of the portal vein — from 0.9 and 1.1 cm; and diameter of the vena cava — from 1.2 and 1.9 cm.

The thickening of bile canaliculi was considered to be a relevant finding because, in animals with hepatogenous photosensitization, anatomopathological analysis shows a firm consistency of the liver and fibrosis of the bile ducts. Histologically, these alterations have been described as pericholangitis with proliferation of epithelial cells in bile ducts (1). No previous reports of ultrasonographic findings in animals with photosensitization

were found in the literature, so, possibly, this is the first description of these findings (Figure 2).

During treatment, the animal was kept away from direct sunlight, fed hay, and submitted to the following protocol: fluid therapy, glucose, methionine, B complex vitamins, and calcium.

Based on the skin lesions, the changes in hepatic function, the ultrasonographic findings, and the improvement in clinical signs after the animal was kept away from the *Brachiaria decumbens* pasture and from direct sunlight, secondary hepatogenous photosensitization was diagnosed.

## References

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