Thermography as an Aid to the Clinical Lameness Evaluation

*Tracy A. Turner, DVM, MS**

Thermography is the pictorial representation of the surface temperature of an object.[9, 15] It is a noninvasive technique that measures emitted heat. A medical thermogram represents the surface temperatures of skin, which makes thermography useful for the detection of inflammation. This ability to assess inflammatory change noninvasively makes thermography an ideal imaging tool to aid in the diagnosis of certain lameness conditions in the horse.[1, 9, 10, 12–16, 18]

INSTRUMENTATION

The first step in applying thermographic imaging is using a reliable instrument. Two different types of devices are used for thermography: contacting and noncontacting, which both have advantages and disadvantages.[4, 15]

Contacting thermography uses liquid crystals in a deformable base.[4, 15] Liquid crystals reflect polarized light within a narrow spectrum of wavelengths. The crystals change shape according to the temperature that contacts them; as they do so, they reflect a different color of light. Therefore, the color of a crystal represents a specific temperature. To use this technology for medical purposes, the liquid crystals are first embedded into a latex base. The base is then made into a flexible and durable sheet that can be easily applied to various skin contours. Crystal impregnated sheets respond to temperature changes between 28° and 34°C (82.4° and 93.2°F). When applied in direct contact with the skin, the crystals change shape, reflect a specific color of light, and form a colored thermal picture of the heat patterns of the skin assayed (Fig. 1). Commercially available contact thermography units usually have an accompanying photographic system so that a recording of the thermogram can be made instantly.

*Diplomate, American College of Veterinary Surgeons; Surgeon, and Director of Sports Medicine, The Rochester Equine Clinic, Rochester, New Hampshire