Is That Dog Really Fat?

Obesity is the most common form of malnutrition in dogs; it has been estimated that 24% to 30% of the dog population is obese. By definition, dogs are obese when body fat is 20% above optimum weight. Health risks of obesity mandate a reliable method for estimating the percentage of body fat, but accurate analysis can be difficult. This study compared 2 clinical and 2 laboratory methods for evaluating body composition. The body condition score is a semiquantitative assessment using a 9-category visual scale from cachectic to severely obese and has been confirmed with the dual-energy x-ray absorptiometry (DEXA) scan in dogs. Measurement of skin-fold thickness over the triceps area is used in humans to estimate body composition and percentage of body fat, but little has been published comparing objective body measurements in dogs. Various breeds store fat in different locations, but the pelvic circumference changes the most with weight gain. In the body mass index method, simple measurements are used with or without gender-specific formulas to estimate body fat. Laboratory methods are the noninvasive DEXA scan and the deuterium oxide (D2O) dilution method. The DEXA scan differentiates body tissues into bone, lean, and soft tissues and has been validated in pigs, poultry, cats, and rodents by cadaver analysis. The D2O dilution technique exploits the fact that body water is associated with lean (nonfat) tissue, providing an indirect measurement of body mass. The D2O solution is a stable, nontoxic isotope, which freely exchanges with water, that is given intravenously. It is measured with nuclear magnetic resonance at equilibrium and evaluated using a formula that includes body weight (before and after injection).

Good correlation was found between measurements of body fat as determined by DEXA scan and the D2O dilution method as compared with results obtained using simple body mass index calculations or by using the 9-point body condition score system. As most clinics do not have access to DEXA and the D2O method is difficult and time-consuming, the laboratory tests were deemed less practical for routine estimation of body fat. However, more clinical studies of different dog breeds are needed to compare percentage of body fat as calculated from morphometric measurements to evaluate their accuracy.

COMMENTARY: BCS and weight should be entered into the patient’s records at each visit. BCS charts are a tool for helping owners to recognize the presence or risk for obesity in their pets.—Patricia Thomblison, DVM, MS