ABSTRACT #42

GROSS AND HISTOLOGIC QUALITY OF BONE MARROW CORE SPECIMENS OBTAINED FROM THE SAME SITE BY A COMBINED ASPIRATION AND BIOPSY TECHNIQUE IN DOGS. JP Reeder, EC Hawkins, MC Cora, SL Marks, CB Grindem. North Carolina State University College of Veterinary Medicine, Raleigh, NC.

Evaluation of both a bone marrow aspirate and core is indicated for some dogs with hematologic disease. A combined technique for collecting both specimens from the same site can be performed by advancing a core biopsy needle through the cortex, aspirating, and then advancing the needle to obtain the core. Advantages include decreased procedural time, material costs and patient discomfort compared with independent collection. However, gross and histologic distortion of core specimens has been documented in people. The aim of this study was to determine if core biopsy preceeded by aspiration (combined technique) results in a core of decreased histologic quality compared with one obtained without pre-aspiration (direct technique).

Jamshidi needles were used to collect biopsies from 26 dogs immediately following euthanasia. Combined and direct techniques were performed on opposite humeri of the same dogs, with side and order randomized. Failed biopsy attempts were not repeated. Slides were prepared routinely, cut along the long axis of the core. Slides were evaluated in random order and blindly by a clinical pathologist (CBG) using a novel scoring system for predetermined criteria. The two slides from each dog were then paired (collection method masked) and overall histologic quality subjectively assessed to identify relative inferiority of either specimen. Comparisons involving numerical data were made by paired t-test for normally distributed data, or Wilcoxon signed rank test. Overall histologic quality was compared using Chi-square analysis (relatively inferior vs. not relatively inferior). A p value <0.05 was considered significant.

Biopsies were unsuccessful in 4 of 26 (15%) dogs when using the combined technique and in 1 dog (4%) with the direct technique. Histologic comparisons were performed on 22 pairs of cores. Length of actual marrow obtained as measured on stained slides was significantly smaller using the combined technique (mean $\pm$ SD, 9.8 $\pm$ 5.6 mm) compared with the direct technique (13.7 $\pm$ 6.3 mm; $p=0.011$). Specimens from the combined technique were of inferior overall quality compared with those from the direct technique ($p=0.015$). Combined-technique cores were considered inferior in 14 dogs and not inferior in 8 dogs (similar in 2 dogs, superior in 6 dogs). Features that contributed to consideration of relative inferiority included intramedullary hemorrhage, crush or fragmentation of specimen, and zones of decreased or absent cellularity. No differences were identified between techniques for overall cellularity, megakaryocyte count, M:E ratio, or iron stores.

In conclusion, the combined technique of marrow collection yields core specimens with significantly shorter marrow length and poorer overall histologic quality compared with those obtained by the direct technique.