Mononuclear cells counting at different moments of equine bone marrow aspiration

Abstract

The cell therapy is used for different horse diseases, and bone marrow-derived mononuclear cells (BMDMCs) are a common cell type applied for this therapy obtained by bone marrow aspiration. The aim of this study was to demonstrate the number of BMDMCs on initial and final moments of bone marrow aspiration in the equine sternum. Methods: Two horses were used, the first one (A1) was 18 years old and the second one (A2) of 21 years old, both with normal physical examination. They were sedated with acepromazine (0,035 mg/kg, IV), followed by 10% xylazine (0,35 mg/kg, IV) and pethidine hydrochloride 50mg/mL. The sites of aspiration at the fourth and fifth sternebrae were cleaned, shaved and anesthetized with 2% lidocaine, followed by antisepsis undertaken using povidone-iodine. Bone-marrow was aspirated using Bone Marrow Harvest Needles, 11ga x 4in, Angiotech in 15 syringes containing IMDM and heparin, for each site, on two different sites (fourth and fifth sternebrae) for each animal. The syringes with samples were kept on ice. Aliquots of 500μL of the first and final syringes, obtained from each site, were separated for the counting of the total cell number (TCNC) performed mechanically using a Cell-Dyn 1300 counter of Abbott Laboratories. Statistical analysis was performed using the paired t test, considering p<0.05. Volumes of 458.5 mL and 408 mL of bone marrow was retrieved from aspirations of A1 and A2, respectively. After the counting, 51,48 x 10⁶ cells were obtained per ml of bone marrow collected an average for first aspirations, and 7,22 x 10⁶ in the last aspirations. We found a significant difference between the first and the last aspiration in each collection point bone marrow of the sternum, p <0.05. There was a significant difference between the mean aspirations.

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