

Bone Turnover During Pregnancy in Horses

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Pregnancy is associated with several physiological and anatomical changes that essentially affect musculoskeletal conditions. However, the influence of pregnancy on equine bone metabolism has not been studied to great detail. This study is intended to longitudinally evaluate the effect of pregnancy on bone turnover markers in clinically normal mares. Venous blood samples were collected 11 times from 19 multiparous mares at 36 weeks pre-parturition (-36w pp), -32w pp, -28w pp, -24w pp, -20w pp, -16w pp, -12w pp, -8w pp, 4w pp, as well as in the week of parturition (0w) and one week post parturition (+1w). All horses had normal gamma glutamyl transferase and creatinine values. Serum concentrations of osteocalcin and carboxy-terminal cross-linking telopeptide of type I collagen (CTX-I) were determined using an equine specific osteocalcin radioimmunoassay and an automated CTX-I electrochemiluminescent sandwich antibody assay. Serum CTX-I values significantly ($P < 0.05$) increased during the last trimester of pregnancy. Serum osteocalcin concentrations decreased between -28w pp and -12w pp and increased thereafter until parturition. Both bone markers significantly ($P < 0.0001$) increased between -4w pp and 0w. In conclusion, changes in bone turnover seem to depend on the stage of pregnancy. Peak values of serum CTX-I and osteocalcin were obtained directly around the time of parturition.