Glucose metabolism and peripheral insulin sensitivity in spontaneous equine pituitary pars intermedia dysfunction

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The aim of the current study was to assess peripheral insulin sensitivity and the basal amount of glucose metabolised in spontaneous equine pituitary pars intermedia dysfunction (PPID).

The euglycaemic hyperinsulinaemic clamp (EHC) technique considered to be the most rigorous test of insulin sensitivity was performed in 7 horses with a diagnosis of PPID based on the presence of hirsutism and positive dexamethasone suppression-test results comprising one gelding and six mares with a mean age of 21.1 ± 5.8 (SD; range 15-34) years. Results were compared with those from five negative (healthy) controls comprising 3 geldings and 2 mares with a mean age of 10.0 ± 2.5 (range 7-13) years and six positive (diseased) controls comprising 2 geldings and 4 mares with a mean age of 12.5 ± 4.5 (range 8-21) years examined during the same period. Differences were assessed by means of the Mann-Whitney U test (two tailed).

Mean basal rate of glucose metabolism (9.0 ± 4.2 versus 16.0 ± 5.2 μmol/kg BW/min; P = 0.030) and mean glucose metabolism rate-to-plasma insulin concentration ratio (2.9 ± 1.6 versus 6.2 ± 2.7 x 10^6; P = 0.048) were significantly lower in PPID horses than in negative controls, respectively. No differences were found between both control groups.

In horses suffering from PPID it seems important to reduce the insulin resistance, thereby potentially decreasing the risk of laminitis as being a major complication of equine PPID. Plasma glucose concentration following fasting might be considered in the screening of horses for PPID.