

Medical Implications of Obesity in Horses—Lessons for Human Obesity

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Abstract

There is growing recognition that obesity is common and represents a significant detriment to the health of companion animals in a manner similar to that by which it is affecting the human population. As is the case for other species, obesity appears to promote insulin resistance in horses and it is through this pathophysiological process that many of the adverse medical consequences of obesity are being characterized. Equine medical conditions that have been described in the context of obesity and insulin resistance differ from those in humans. Chronic human conditions that have been attributed to obesity and insulin resistance, such as atherosclerosis and diabetes mellitus, are rarely described in obese horses. Significant current interest is centered on the recognition that insulin resistance plays a role in the pathogenesis of laminitis, a potentially severe and debilitating cause of lameness in the equine species. Other equine medical conditions that are more likely in obese, insulin-resistant individuals include hyperlipemia (hepatic lipidosis) and developmental orthopedic disease (osteochondrosis). Pituitary pars intermedia dysfunction (equine Cushing's syndrome) represents another common endocrinopathic condition of older horses associated with insulin resistance. This review presents an introductory overview of the present understanding of obesity and insulin resistance and how these conditions may be associated with disease conditions in horses.

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Abbreviations: (BMI) body mass index, (CGIT) combined intravenous glucose–insulin test, (EMS) equine metabolic syndrome, (HLI) hoof lamellar interface, (11 β -HSD1) 11 β -hydroxysteroid dehydrogenase-1, (IR) insulin resistance, (IV) intravenous, (NSC) nonstructural carbohydrate, (POMC) proopiomelanocortin, (PI) pars intermedia, (PPID) pituitary pars intermedia dysfunction

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