Disease is the price animals pay for domestication. Nowhere is this disturbing maxim more unexpected than in the nutritional management of our most cherished animal companions. Obesity continues to increase as a risk factor for life-threatening diseases among the human population (Flegal et al., 2002). Somehow, this all too human inclination to overfeed, with its attendant threats to health and welfare, becomes inappropriately transferred to animals in our care. Among horses, and especially ponies, obesity rapidly leads to the onset of painful conditions and may cause irreversible changes which may tragically warrant euthanasia.

Not all of the problems of these portly ponies can be laid at the door of an owner’s purposeful largesse. The battle of the burgeoning domestic pony has deep prehistoric roots. The majority of UK domestic ponies are of native types, exquisitely adapted over millennia to thrive in harsh, seasonal environments where grazing is limited and, at best, of indifferent quality. Unlike feral animals, the majority of domestic ponies perform minimal work but, having been trans-located to well managed pastures, they then receive a relative abundance of high quality forages. These factors may be exacerbated by the animals’ naturally adaptive drive to store body fat in summer as a buffer against expected scarcities of winter feedstuffs (Fuller et al., 2001). These factors in combination promote adipose deposition. In turn, accumulating fat deposits synthesise and release increasing quantities of inflammatory cytokines, which have been associated with the development of insulin resistance, a condition prevalent among obese Equids (Vick et al., 1998). From a pharmacological standpoint, abnormal but unquantifiable body fat content seriously impairs the accuracy and efficacy of drug and anaesthetic regimes. In short, with ponies accounting for approximately half of UK equines, the obese pony comprises a major welfare issue that could be markedly improved by the provision of clear indicators for estimating total body fat.

Great improvements would be achieved by establishing and promoting a pony-specific body condition scoring (BCS) system which would facilitate the expedient detection and correction of insidious weight changes. However, our current knowledge of pony body composition is sparse and poorly documented and a much greater understanding of the endogenous, intensely seasonal, physiological control of fat deposition and mobilisation from different adipose tissues is required. The significance of discrete regional deposits to health also warrants investigation.

In developing a pony-specific BCS system, two issues dominate the selection of visual/tactile parameters to be used for scoring relative adiposity for health purposes. Firstly, in

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the light of the extreme variability in conformation and body type, such indices must demonstrate an unequivocal association with overall ‘fatness’ (TBFM) throughout the range of body conformations in the group of animals in which their use is proposed. Secondly, the scoring system must be able to distinguish between specific fat deposits which are physiologically relevant to disease as opposed to the cosmetically undesirable. Recent advances in human medicine have identified a genetically-determined, ‘normal-weight, obese-syndrome’. People in this category have normal body mass indices and phenotypes but measures of TBFM may exceed 30%. Not surprisingly, these individuals have increased risk of obesity-related metabolic disease (De Lorenzo et al., 2007). This syndrome may have specific relevance to the pony, where susceptibility to laminitis and the development of insulin resistance have also been noted in some phenotypically, non-obese animals (Bailey et al., 2007).

In human patients, indirect measures of TBFM such as bioelectrical impedance analysis (BIA) and deuterium oxide dilution (D2O) are widely used, both as markers of disease risk and for the provision of corrective nutritional advice. More recently, our understanding that visceral fat deposits constitute the greatest threat to human health has modified advice based on TBFM to account for individual differences in people for preferred sites of fat deposition (Vega et al., 2006). The greater health-risk associated with visceral fat is empirically detected in individuals having ‘apple-shaped’ body profiles as opposed to the ‘pear-shaped’ depositors with sub-cutaneous fat reserves (Donaldson et al., 2004). A similar understanding of the physiological and/or pathological significance of regional adipose deposits in the pony could facilitate the identification of high-risk or ‘resistant’ individuals. As with humans, it might be expected that some animals may preferentially store fat in ‘risky places’ at relatively modest TBFMs while for others ‘risky deposits’ may constitute a storage site of last resource. Recent studies in genetically modified mice are beginning to unravel the genetic basis of ‘fat patterning’, the order in which individual adipose tissues are recruited in the development of obesity, and raise the possibility of selective breeding for ‘resistant’ types (Reed et al., 2006).

In this issue of *The Veterinary Journal*, Rebecca Carter and her colleagues offer an important first step towards these overall goals (Carter et al., 2009). It has long been recognised that adipose reserves associated with the nuchal ligament are visibly and palpably increased in obese horses and ponies. By developing an objective scale for scoring apparent neck crest fatness (CNF), and linking it to other indices of ‘fatness’ and laminitis-risk, these authors have developed a practical aid to the clinical evaluation of apparent adiposity in horses and ponies. Further work is required to confirm the appropriateness of this scoring system across breeds and genders. However, the CNF provides a specific score for appraisal of the neck region which could in time be combined with similar standardised scores of other key body regions to provide a reproducible, semi-objective evaluation of body condition.

Undoubtedly, the development of a practical BCS system for ponies which can monitor changes in TBFM and prioritise ‘risky’ regional deposits would provide a valuable tool for their welfare and facilitate future epidemiological investigations to document and counter obesity-related disease. To achieve this, it is important that we first address the fundamental questions governing the where, how and why of adipose biology in these appealing creatures.

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