Title	A novel twist to uterine torsion and abomasal displacement in dairy cows
Authors(s)	Beltman, Marijke Eileen
Publication date	2013-06
Publication information	The Veterinary Journal, 196 (3): 284-285
Publisher	Elsevier
Item record/more information	http://hdl.handle.net/10197/4661
Publisher's statement	þÿ T h i s i s t h e a u t h o r s v e r s i o n o f a w o r k t h a t w a s a c c e p t e d f o Journal. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication. A definitive version was subsequently published in The Veterinary Journal (VOL 196, ISSUE 3, (2013)) DOI: http://dx.doi.org/10.1016/j.tvjl.2012.11.020
Publisher's version (DOI)	10.1016/j.tvjl.2012.11.020

Guest Editorial

A novel twist to uterine torsion and abomasal displacement in dairy cows

Every bovine practitioner is acutely aware of the increased risk of the occurrence of 'transition cow disease' in dairy cows during their transition from late pregnancy to early lactation. Changes in management during this time can result in a multitude of problems including those associated with metabolic and energy imbalances, as well as infection of the uterus and mammary gland (Mulligan et al., 2006; LeBlanc, 2008). The periparturient period can thus be quite a precarious phase in terms of the health of these 'high performance athletes' that are constantly balancing on a tightrope between health and disease.

In an article by Dr. Richard Laven and colleagues from the Institute of Veterinary Animal and Biomedical Sciences, Massey University, New Zealand (Lawrence et al., 2012), published in this edition of *The Veterinary Journal*, it is exactly during this period in a dairy cow's production cycle that the authors report an increased incidence in uterine torsion and abomasal displacement. The time periods that are compared are those before and after the foot-and-mouth disease (FMD) outbreak in the UK in 2001. This epidemic had a massively disruptive impact on the farming industry and on the UK as a whole, both in economic and sociologic terms, and the period has left an indelible mark on the consciousness of farming communities, veterinarians and the wider public. Radical changes to cattle farming both at the level of individual farming enterprises as well as to the industry as a whole resulted from the outbreak. Many herds that were traditionally pasture-based morphed into herds that were predominantly housed, a change that had particular implications for the nutritional management of the animals involved. Another upshot was the restocking of depopulated

farms with new cows of different genetic background and infection status which required alterations to husbandry and biosecurity.

The increased incidence in both abomasal displacement and uterine torsion in dairy cows in the UK in the aftermath of the FMD outbreak reported by Lawrence et al. (2012) is a fascinating finding and begs the question 'why ?'. In terms of pathogenesis both diseases have similarities: both affected organs have mesenteric attachments within the peritoneal cavity that leaves a lot of 'room for manoeuvre' so that they can fairly readily become displaced from their normal position. In the case of uterine torsion, increased frequency of movement of the calf in utero, together with the increased frequency with which the cow lies/stands, seem to be important in the twisting of the entire organ around the 'fixed' positions of the mesovarium and cervix/vagina (Drost, 2007). In the case of the abomasum, periparturient changes to dietary constituents or intake can lead to increased production of intra-luminal gas which, when combined with the associated atony of the organ, can lead, not only to its distension, but also to its increased mobility within the abdomen. Given such mechanisms are at play, changes in the abdominal size/shape of cows are likely to contribute to both diseases.

Previously in *The Veterinary Journal*, Doll et al. (2009) detailed risk factors associated with abomasal displacement and concluded that the tall stature and increased body depth of Holstein-Friesians predisposes these animals to displacement. It is well established that the Holstein-Friesian population has changed in size and shape over the last number of decades (Wittek et al., 2007). This change, in combination with the reconfigurations in organ topography within the bovine abdomen occurring from the last trimester of pregnancy

through to the first months of lactation leaves these animals more predisposed to both uterine torsions (before) and abomasal displacement (after) parturition (Wittek et al., 2007). There is also evidence that the genetic background of an animal is an important risk factor for both abomasal displacement (Zwald et al., 2004) and uterine torsion (Frazer et al., 1996). The Brown Swiss and Holstein-Friesian breeds have the greatest and lowest predispositions to developing uterine torsion, respectively (Frazer et al., 1996). Increasing calf size also amplifies the risk of uterine torsion and this parameter is directly related to the genetic composition of both sire and dam (Hansen et al., 2004).

The article by Lawrence et al. (2012) describes an interesting and perhaps somewhat unexpected legacy of this FMD outbreak whereas heretofore the focus has been on the spread of endemic infectious diseases such as bovine tuberculosis that resulted from large-scale post-outbreak farm restocking (Johnston et al., 2011). It is important we bear such unexpected consequences in mind when normal dairy production resumes in the months and years following a major disease incident.

Marijke Beltman
School of Veterinary Medicine,
University College Dublin,
Belfield,
Dublin 4,
Ireland
E-mail address: Marijke.Beltman@ucd.ie

References

Doll, K., Sickinger, M., Seeger, T., 2009. New aspects in the pathogenesis of abomasal displacement. The Veterinary Journal 181, 90-96.

Drost, M., 2007. Complications during gestation in the cow. Theriogenology 68, 487-491.

Frazer, G.S., Perkins, N.R., Constable, P.D., 1996. Bovine uterine torsion: 164 hospital referral cases. Theriogenology 46, 739-758.

Hansen, M., Lund, M.S., Pedersen, J., Christensen, L.G., 2004. Gestation length in Danish Holsteins has weak genetic associations with stillbirth, calving difficulty, and calf size. Livestock Production Science 91, 23-33.

Johnston, W.T., Vial, F., Gettinby, G., Bourne, F.J., Clifton-Hadley, R.S., Cox, D.R., Crea, P., Donnelly, C.A., McInerney, J.P., Mitchell, A.P., Morrison, W.I., Woodroffe, R., 2011. Herd-level risk factors of bovine tuberculosis in England and Wales after the 2001 foot-and-mouth disease epidemic. International Journal of Infectious Diseases 15, 833-840.

Lawrence, K., Tulley, W., Laven, R., 2012. Observations on the incidence and seasonality of uterine torsion and left displaced abomasum following the 2001 outbreak of foot-and-mouth disease in the UK doi.org/10.1016/j.tvjl.2012.10.034

LeBlanc, S.J., 2008. Postpartum uterine disease and dairy herd reproductive performance: A review. The Veterinary Journal 176, 102-114.

Mulligan, F.J., O'Grady, L., Rice, D.A., Doherty, M.L., 2006. A herd health approach to dairy cow nutrition and production diseases of the transition cow. Animal reproduction science 96, 331-353.

Wittek, T., Sen, I., Constable, P.D., 2007. Changes in abdominal dimensions during late gestation and early lactation in Holstein-Friesian heifers and cows and their relationship to left displaced abomasum. Veterinary Record 161, 155-161.

Zwald, N.R., Weigel, K.A., Chang, Y.M., Welper, R.D., Clay, J.S., 2004. Genetic selection for health traits using producer-recorded data. II. Genetic correlations, disease probabilities, and relationships with existing traits. Journal of Dairy Science 87, 4295-4302.