VIR 008

Mucosal disease outbreak and possible sources of bovine viral diarrhea virus in herds from a beef farm of Buenos Aires province

Enrique Leopoldo Louge Uriarte[1], Maximiliano Joaquín Spetter Lucas[2], Susana Beatriz Pereyra[1], María Rosa Leunda[1], Gustavo Mario Combessies[3], Ignacio Mariano Llada[5], Ernesto Raúl Odriozola[5], Andrea Verna[1,2], Anselmo Carlos Odeón[4] y Erika Analía González Altamiranda[1,2]

[1] Laboratorio de Virología Veterinaria, Instituto de Innovación para la Producción Agropecuaria y el Desarrollo Sostenible (IPADS) (INTA-CONICET). Balcarce, Buenos Aires, Argentina

[2] Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Ciudad Autónoma de Buenos Aires, Argentina

[3] Laboratorio Azul Diagnóstico SA. Azul, Buenos Aires, Argentina

[4] Facultad de Ciencias Agrarias, Universidad Nacional de Mar del Plata (UNMDP). Balcarce, Buenos Aires, Argentina

[5] Actividad privada. Balcarce, Buenos Aires, Argentina

lougeuriarte.enrique@inta.gob.ar

galtamiranda.erika@inta.gob.ar

Cattle persistently infected (PI) with non-cytopathic (ncp) strains of bovine viral diarrhea virus (BVDV) are immunotolerant and have a major role in virus transmission. Also, they are highly prone to develop mucosal disease (MD) after an overwhelming infection with the mutant cytopathic (cp) strain. In August 2018, an outbreak investigation was conducted in a beef farm. Yearling steers and heifers

died in a time-spanned fashion (30/205; mortality, 14.6 %). At necropsy two steers showed erosions and ulcers in the digestive organs and atrophy and necrosis of Peyer's patches. BVDV antigen was detected in ear notch samples by immunochromatography, whereas the NS5B gene of BVDV-1 was detected in spleen samples by nested multiplex RT-PCR (RT-mPCR). Cytopathic effect of BVDV was confirmed by virus isolation and direct immunofluorescence (VI+DIF) in samples from brain, spleen, and lung. Because of this findings, BVDV infections were evaluated in herd 1 (147 suckling calves; 154 cows), herd 2 (61 suckling calves; 70 cows, 22 purchased while pregnant in 2018), herd 3 (13 cows not calved), and herd 4 (11 bulls); herd 2 was handled separately. Peripheric leucocytes (PBL) (393) and sera (63) were analyzed by RT-mPCR. Thirteen samples (2.8 %) of PBL from suckling calves of herd 2 were positive for BVDV-1. Sera of these calves were analyzed by antigen (Ag)-ELISA (13), VI+DIF (2), and RT-mPCR (13), whereas PBL were also analyzed by VI+DIF (11). All sera resulted negative for Ag-ELISA and VI+DIF, but most of them (11/13) were positive for RT-mPCR. Additionally, most PBL (8/11) resulted positive for VI+DIF. Sequence analysis of the 5'UTR showed 100 % identity between the RT-PCR products (288 pb) of PBL from one suckling calf and the brain from one yearling steer suffering MD. Although the PI status was not confirmed, suckling calves are important in BVDV transmission because they serve as unnoticed sources. In Argentina, control programs in beef farms should evaluate these animals when testing for PI cattle. RT-PCR methods and suitable samples are highly encouraged to avoid false negative results in suckling calves, mainly when results of certain techniques (Ag-ELISA and VI+DIF) can be influenced by passively acquired maternal antibodies.

Keywords: bovine viral diarrhea virus, mucosal disease, persistently infected cattle, suckling calves, peripheric leucocytes, RT-PCR.