

BOVINE NEONATAL PANCYTOPENIA: CLINICAL SIGNS AND PATHOLOGY

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Bovine neonatal pancytopenia (BNP) is the consensus name for a bleeding and pancytopenic syndrome in neonatal calves which emerged in 2008 all over Europe. Between July 2008 and September 2009, 22 BNP calves, from 16 herds, were admitted for clinical examination. Breed distribution was 63% Belgian Blue, 31% Holstein-Friesian and 5% crossbreeds. There were no differences in gender (50% male, 50% female) and the affected animals were on average 16 days (7-27 days) old upon admission. In the histories, high fever (up to 41°C) was mentioned in 53% of the cases and the first sign of disease was most frequently prolonged bleeding after ear tag placement or injection. Calves demonstrated variable degrees of cutaneous bleeding, pale mucosae with petechiae and melena. Rectal temperature was variable. Mental state was initially normal, but as the disease progressed severe depression appeared. Of the admitted calves, 91% died, despite therapy. At the moment of sampling all cases had thrombocytopenia and marked leukopenia (granulocytes, lymphocytes and monocytes). In 8 calves anemia was present as well. In total 25 BNP calves were autopsied. All cases showed generalized haemorrhages and had an anemic appearance. Histopathology of all mucosae showed haemorrhage with preservation of tissue architecture. Spleen and lymph nodes consistently showed severe diffuse lymphoid depletion in which T- and B-compartments were equally affected. In 18% of the calves the thymus was examined and lymphoid depletion was present. The bone marrow was characterized by depletion of hematopoietic tissue in which all cell lines were affected with reduction of stem cells and progenitor cells including megakaryocytes (total aplasia). Multifocally, single and groups of macrophages were present. In 10 live calves bone marrow aspiration and cytology was performed at different stages of the disease. In 5 animals groups of macrophages in close association with lymphocytes could be found in an otherwise aplastic bone marrow. The macrophages had an oval to round excentric nucleus and the cytoplasm was abundant and clearly vacuolated in two cases (activation). Hemophagocytosis was seen in two calves. Cytology of peripheral blood showed activated lymphocytes, thrombocytopenia and granulocytopenia in most cases. If present, the anemia was non regenerative, normocytic and normochromic. In one surviving calf normoblastosis and signs of regeneration were observed.