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An intravenous injection of peripheral blood-derived mesenchymal stem cells (Veno-Cell®): Would it make a difference?

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Abstract

It has been described that mesenchymal stem cells (MSCs) have homing capacities and immunomodulating effects *in vitro*. In this regard, the intravenous application of MSCs has been previously reported to restore the hearing in guinea pigs and to prevent transplant rejections. Moreover, the intravenous injection of a mixture of MSCs and hematopoietic stem cells has been reported to improve multiple sclerosis (MS) symptoms in humans, improve ophthalmological diseases in horses and they could be used safely in equine dermatological pathologies.

However, there are no reports on the effect of an intravenous injection of MSCs on the animal's hematological status. Therefore, MSCs were isolated from a young donor horse after having tested his blood on a wide range of transmittable diseases. Then, 6 elderly horses (13- to 15-years-old) received a single injection into the jugular vein (3 treated + 3 controls). Multiple blood samples were taken at the same time of the day (10:30 a.m.) at different time points: 1 week before and immediately before the injection (the average = T_0) and 1 day (T_1), 1 week (T_2), 3 weeks (T_3) and 2 months (T_4) after the treatment. Moreover, a strict housing and handling regime was implemented. In conclusion, the blood of the control horses remained unaltered, whereas the same changes in hematological parameters (glucose, cortisol, insulin, insulin-like growth factor type-I and thrombocytes) were noticed in the blood of all 3 patients.

Biography

Jan H. Spaas, veterinarian, graduated from the Faculty of Veterinary Medicine, Ghent University (Belgium) in 2010. In that year he also won the price for young authors of the Flemish Veterinary Journal. Then, he worked at the Department of Comparative Physiology and Biometrics of the Faculty of Veterinary Medicine, Ghent University, where he generated several papers about different *in vitro* and *in vivo* findings concerning equine stem cell research. Since 2012, he became the laboratory director of Global Stem cell Technology, an organization which is specialized in regenerative therapies for horses