Rise in RBC aggregability and concomitant decrease in blood pressure 10 days after injection of the long acting erythropoietin analogue MIRCERA

Varlet-Marie E¹, Joré C¹, Brun JP²
¹Faculty of Pharmacy
²INSERM U1046

Erythropoietin is a major regulator of blood viscosity. Its long lasting action analogue MIRCERA seems to be also employed in modern doping. We took the opportunity of a study aiming at developing a detection of recent MIRCERA injection in the context of doping detection to assess the effects of this EPO analogue on RBC aggregation. A single dose 200 µg of MIRCERA was injected to 10 male volunteers and blood samplings were drawn over 24 days. After injection a decrease in mean corpuscular volume at day 2 (p<0.01) and day 10 (p<0.02), a rise in reticulocyte count (p<0.001) between day 4 and day 17 and a decrease in ferritin a day 5 (p<0.05). Hemoglobin decreased at day 4 (p<0.005). Hematocrit was unchanged. There was a dramatic (+67%) increase in RBC aggregation index ‘M’ (from 9.49±1.01 to 17.66±1.8 p<0.01). A decrease in systolic blood pressure was observed during the period from day 4 to day 17 (at day 10: -11.90±2.28 mmHg p <0.001; at day 17: -15.80±2.83 p <0.001. There was also a decrease in diastolic blood pressure, mean and pulse pressure. Correlations between this decrease in blood pressure and M did not reach significance but pulse pressure was positively correlated to M (r=0.743p<0.05).

These data show that the long acting erythropoietin analogue MIRCERA strongly increases RBC aggregation parallel to a decrease in blood pressure, but a possible causative link between the two events is not clearly evidenced.