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Plasma rich in leucocyte growth factors in patients with cerebral palsy: Case-control study

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Background: There is no doubt that the platelet rich plasma is a common medical technique, that is known as regenerative medicine, through which local and systemic effect of known plasma growth factors occurs activation, cell proliferation and differentiation depending on recovered cell fraction in the final product obtained. Here, a case-control study presented to objectify the benefit of the systemic application of leukocyte plasma growth factors in cerebral palsy patients undergoing specific neurological rehabilitation programs.

Material and Methods: In a population of 50 Caucasian patients with age range between 5 and 15 years diagnosed with marked severe generalized spasticity and cerebral palsy, under the same program of neurorehabilitation; an intravenous injection of leukocyte rich plasma (25 ml) was administered in a group of 25 of them. Monitoring the cognitive development it was performed by Barthel scale, before and at 1, 2, 3, 4, 5 and 6 months after injection. The cell count leukocyte-platelet was determined by coulter type Beckman, as well as insulin-like-1 growth factor (IGF-1), platelet-derived growth factor (PDGF), vasculo-endothelial growth factor (VEGF) and transforming growth factor B (TGF-B) through specific kits of ELISA in patients before treatment, in the final product, as well as in both groups at 24 hours of the same, a month, 2,3,4,5 and 6 months after treatment. Specific descriptive statistics techniques were used as soon as the F-Fisher tests for inferential statistical study of the results.

Results: No adverse effects were observed in patients with the exception of a small hematoma in the area of channeling venous access. There has been a clear improvement statistically significant at 2 month follow-up in cognitive sphere (memory, ability to perform more complex tasks, and the acquisition of new skills) clearly higher in the group of patients treated with plasma rich in leukocyte growth factors, ($p = 0.013$), remaining stable from the 3rd month follow-up. Although at 24 h of therapy in the treatment group, serum levels of growth factors VEGF and TGF-B type increased 5-6 times as compared to baseline reference levels and the control group, statistically significant ($p = 0.02$) was not obtained correlated with cognitive improvement during 6 months of clinical follow-up, because plasma levels of growth factors obtained were similar in both groups.

Conclusion: We propose that this therapy is useful in these patients to take the neurostimulator and neuroregenerator power of endogenous growth factors derived from leukocytes, increasing the effect of neurorehabilitation and shortening of cognitive recovery without finding correlated with plasma levels of growth factors obtained during the study of the sample

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