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NEUROSCIENCE 2012

Presentation Abstract

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Presentation Title: Adult human mesenchymal stem cells effect on cisplatin treated dorsal root ganglia survival and differentiation.

Location: Hall F-J

Presentation time: Saturday, Oct 13, 2012, 2:00 PM - 3:00 PM

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Abstract: The peripheral neurotoxicity is a side effect of many chemotherapeutic agents, and it represent the main drug dose limiting factor. To avoid it without interfering with the antineoplastic activity, several strategies were suggested, but with poor results. It has already been demonstrated that mesenchymal stem cells (MSCs) prolong the survival of dorsal root ganglia (DRG) neurons; here we verified the neuroprotective potential of human MSCs on rat embryonic DRG exposed to the chemotherapeutic and neurotoxic agent cisplatin. DRG were exposed to different cisplatin concentration for 24 hours, and then cocultured with hMSCs or with hMSCs conditioned medium (hMSCs CM). Neurotoxicity was evaluated by measuring the DRG longest neurite, and DRG survival was estimated by measuring the death area. The death area observed in CDDP-treated DRG was reduced in presence of hMSCs. At early times (48h) both hMSCs and their CM improve neurite outgrowth, while at longer times (1 month) hMSCs direct cocultures and hMSC CM determine a neurite outgrowth slowdown with respect to DRG treated only with CDDP. The same effect was observed in untreated DRG. In order to deepened the hMSCs effect on neurite elongation we studied by immunofluorescences, by Western Blot and ELISA the expression and the release of some proteins involved in the inhibition of neurite elongation and generally expressed by glial cells, such as CSPG, MAG and Nogo. We demonstrated that hMSCs expressed and released these proteins in the culture medium.

Our results suggest a neuroprotective effect of hMSCs on CDDP toxicity and evidenced the ability of these cells to modulate neurite elongation. The effect of

hMSCs on DRG survival and maturation and the expression of some glial proteins by hMSCs suggest that hMSCs can act as glial cells.
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