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Autologous stem cell based treatment of spinal cord injury

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Every year, between 250 000 and 500 000 people become spinal cord injury victims (WHO 2013). Austria has 150 to 200 cases per year (25 per million population) costs for the treatment are high, 1 million € during the first year after the accident, about 50% less during the consecutive years. Hence search for an effective treatment should be a primary goal of health care takers. Although stem cell treatment has been shown to be effective in several studies with no negative side effect its implementation into any acute care scheme is far from reality. The rationale for aBM-SC treatment are: induce neuroprotection, inflammatory suppression and neural repair, allowing reconstruction of totally damaged tissues or preventing partially damaged cells from evolving to cell demise. This can be achieved by stimulating neovascularization and increase oxygenation trans differentiating stem cells into specific neuronal cells and promotion of synaptic connections and promotion of neuroplasticity. BM-SC (bone marrow stem cells) are easy to harvest from the iliac crest and a gradient centrifugation can separate the buffy coat layer, which contains the highest concentration of HSCs and MSCs hBMSCs possess of great potential to differentiate into functional neurons, indicating that hBMSCs may be an ideal cell source in managing a variety of clinical diseases such as spinal cord injury. Another mechanism is the paracrine effect of plasma, which is an important adjuvant to the cell therapy (VEGF, HGF, IGF, Nos). SCT is the only treatment that shows improvement besides for spontaneous recovery. Several clinical cases will be demonstrated with improvement of sensory and motoric function. In general 1 or 2 segments improvement can be achieved. Specifically in cervical injuries, where one segment means much more improvement than one segment in lumbar injuries. Early treatments between 6 and 12 months after injury is possibly superior to treatment in the chronic state. Younger patients may have better results than older ones. More than one treatment should be performed in order to achieve higher number of cells

Biography

Kobinia is an Austrian surgeon who started his career at the Hospital of Lainz at the General Hospital in Vienna and later in Linz where he focused his area of expertise on thoracic and vascular surgery. During his stay as Fellow of the "American Association for Thoracic Surgery" at the Massachusetts General Hospital at the University of Harvard, Boston. He wrote his professorial dissertation about the prostaglandins metabolism of the heart during cardioplegia.

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