



# A New Hope in the Treatment of Intraventricular Haemorrhage in Preterm Infants: Mesenchymal Stem Cells

Serdar KABATAS, Erdinc CIVELEK

University of Health Sciences, Gaziosmanpasa Training and Research Hospital, Department of Neurosurgery, Istanbul, Turkey

**Corresponding author:** Erdinc CIVELEK ✉ civsurgeon@yahoo.com

To the Editor,

We read with interest Bozkaya et al. (1) article about a male preterm infant with Germinal matrix-intraventricular hemorrhage (GM-IVH), who recovered after MSC's transplantation. GM-IVH is the most serious complication of premature birth. It is known that bleeding originates from capillaries in the germinal matrix that have not fully developed. 25–50% of the GM-IVH cases are asymptomatic (2). In patients with significant GM-IVH, the patient's neurological status may be very poor. The most important outcomes of the GM-IVH are periventricular hemorrhagic infarction and post-hemorrhagic hydrocephalus (PHH). The prognosis of bleeding is related to its amount and damage to brain tissue. The major points in this process is thought to be related to the presence and degree of infarct areas around the ventricle (2).

The study is appealing, but it does raise questions and concerns. Overall, the study has faced several weaknesses that call into question the findings and interpretation. Firstly, more detail information about the technic of intraventricular application are required. Another important point to be criticized is that such applications should be performed by neurosurgeons in order to reduce post-interventional complications (3). Unfortunately, we could not see such an multidisciplinary approach in this article. Thus, as treatment progresses in such patients, a temporary ventricular reservoir can be placed so that maintenance MSC can be given.

Secondly, although there is no consensus in the optimal timing and dosage, we agree that MSCs and especially exosomes derived from MSCs are a new hope in this field. Furthermore, exosomes can pass blood-brain barrier and may help regeneration of the damaged neural tissue. They should discuss this new issue in the article.

Thirdly, the patient was followed up with cranial ultrasound. However, the documentation was insufficient because before and after the procedure diffusion MRI could be performed and periventricular infarct areas and, if any, healed infarct areas could be shown (1).

## ■ AUTHORSHIP CONTRIBUTION

The authors (SK, EC) confirm responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

## ■ REFERENCES

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