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Role of oligodendrocyte-neurovascular unit in white matter repair

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Highlights:

- The neurovascular unit is a conceptual framework to understand stroke pathology.
- Oligodendrocyte lineage cells are important cell types in white matter.
- Oligodendrocyte-related cell-cell interaction support white matter repair.

Abstract

White matter damage caused by neurodegenerative diseases is almost incurable at present and an effective treatment has been waited for a long time. Etiology of the white matter damage is attributed to the collapse of axon-myelin complex and the breakdown of blood-brain barrier (BBB), which result in disruption of the white matter function. While the white matter dysfunction cannot be repaired by itself, some compensative responses may occur after the damage. Oligodendrocyte lineage cells play an important role for the white matter function, and during the chronic phase of diseases, they aim to cooperate with other neurovascular component cells to repair the damaged white matter tissue. In this mini-review, we will introduce our current understandings towards the roles of oligodendrocyte in the neurovascular unit, focusing on their involvements in the white matter repair after the injury.

Key words: oligodendrocyte, oligodendrocyte precursor cell, neurovascular unit, cell-cell interaction, white matter repair

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