Abstract

Damage to the mammalian central nervous system often leads to persistent functional deficits. One important cause why these deficits become permanent is the establishment of a scar that blocks regeneration. This seminar will explore the questions of (1.) what the origin and function of scar tissue is and (2.) how the fibrotic scar component influences axonal regeneration and functional recovery after CNS injury. Evidence will be presented that (1.) a specific subpopulation of perivascular cells is the main source of stromal scar tissue following spinal cord injury. (2.) Pericyte-derived fibrotic cells participate in the wound closure and are crucial for the re-establishment of tissue integrity after injury but constitute the long-term persistent fibrotic scar core. (3.) Attenuation of pericyte-derived scarring improves axonal regeneration and functional recovery. (4.) Pericytes are a new therapeutic target for the treatment of CNS lesions.