Abstract

Morfin is a clinically used analgesic drug but also an abusive drug. It has an impact on a wide range of CNS regions (nucleus accumbens, ventral tegmentum, hippocampus, etc.) and affects their functions, e.g. cognitive functions or anxiety. Although the results of so far published studies are often contradictory, the effects on cell death and proliferation in the CNS have been demonstrated. In this work, we focused on how chronic administration of morphine and subsequent withdrawal of this drug affects neurogenesis and neurodegeneration in the rat brain and how it affects some markers involved in the addiction and post-drug-induced condition. We have succeeded in introducing immunohistochemical markers for monitoring neurogenesis (bromodeoxyuridine and doublecortin) and neurodegeneration (Fluoro-Jade C) and for detection of selected neuromodulatory peptides (cholecystokinin and neuropeptide Y). We have found that morphine may influence the process of neurogenesis and neurodegeneration, but its effects differ in different CNS structures (nucleus accumbens, hippocampus, and amygdala).

Key words: Morphine, brain, rat, withdrawal syndrom, neurogenesis, neurodegeneration