

The expression of alpha-internexin and peripherin in the developing mouse pineal gland

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摘要

Abstract

The mammalian pineal gland contains pinealocytes, interstitial glial cells, perivascular macrophages, neurons and neuron-like cells. The neuronal identity of neurons and neuron-like cells was an enigma. alpha-Internexin and peripherin are specific neuronal intermediate filament proteins and are expressed differentially in the CNS and PNS. We investigated the development of immunoreactivity and expression patterns of mRNAs for alpha-internexin and peripherin in the mouse pineal gland to determine the neuronal identity of these cells. Both alpha-internexin- and peripherin-immunoreactive cells were readily visualized only after birth. Both proteins were at the highest level on the postnatal day 7 (P7), rapidly declined at P14, and obtained their adult level at P21. Both protein and mRNA of alpha-internexin are expressed in some cells and nerve processes, but not all, of adult mouse pineal gland. Less number of peripherin immunoreactive or RNA-expressing cells and nerve processes were identified. Accumulations of alpha-internexin and peripherin proteins were also found in the cells from the aged pineal gland (P360). We concluded that some cells in the developing mouse pineal gland may differentiated into neurons and neuron-like cells expressing both alpha-internexin and/or peripherin only postnatally, and these cells possess dual properties of CNS and PNS neurons in nature. We suggested that they may act as interneurons between the pinealocyte and the distal neurons innervating the pinealocytes, or form a local circuitry with pinealocytes to play a role of paracrine regulatory function on the pinealocytes.