



CHANGES IN THE NUMBER AND STRUCTURE OF PV-IR NEURONS IN THE RAT HIPPOCAMPUS DURING DIABETES

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Introduction

Hippocampus is known as a center of memory and reasoning. The aim of the study was to trace parvalbumin expression levels in the hippocampal neurons in the diabetic rats. Possible changes in PV-IR neuronal morphology were also evaluated.

Material & Methods

- Two groups of animals (diabetic and non-diabetic)
- Rats brains collection
- Histological and immunohistological staining
- Morphometric and statistical analysis

Results

There was a significant reduction in the number of PV-IR nerve cells and nerve fibers in the hippocampus of rats from diabetic group (vs. control). In the morphology of PV-IR neurons in diabetic group II was not found the presence of pyramidal neurons was detected only few nerve fibers compared to the control group. Swelling of some

PV-IR neurons in the hippocampal fields of CA1-CA3 was also noted in the diabetic group.

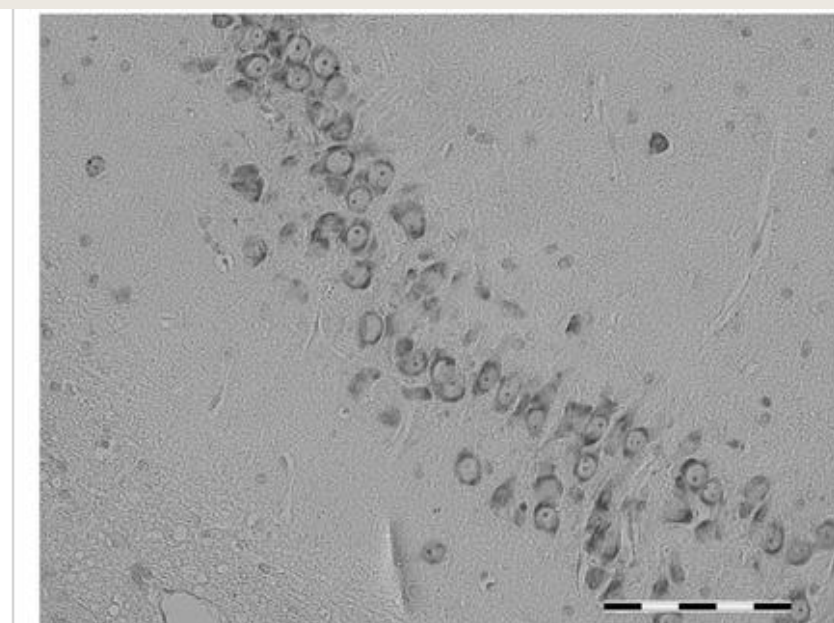
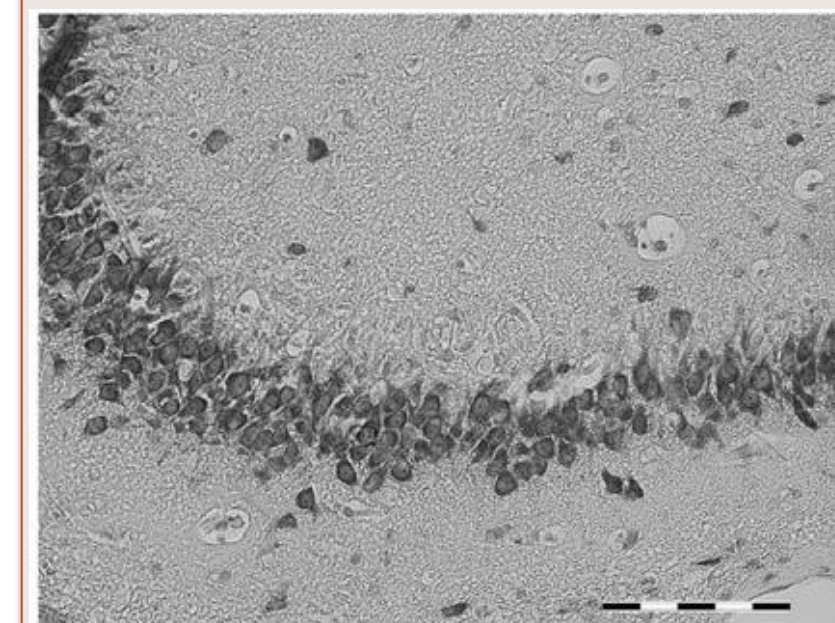
Table 1 Average numbers of PV positive neurons in CA1, CA2, and CA3 fields and in the dentate gyrus of the hippocampus of the rat from the control and experimentally induced diabetes groups. Statistically significant differences are marked* (vs. control group).

	CA1 (neurons PV-ir)	CA2 (neurons PV-ir)	CA3 (neurons PV-ir)	DG (neurons PV-ir)
	arithmetic rhythm ± standard deviation			
Control group (non- diabetic)	227.7± 6,7	172.2± 4,4	153.1± 4.2	33.1± 27
Experimental group (diabetic)	84.8± 3,3*	57.3± 2.1*	62.3± 2.1*	19.5± 2.1*

Neurons in the CA3 field of the rat hippocampus.

- Group I control.
- Experimental group II with experimentally induced diabetes.

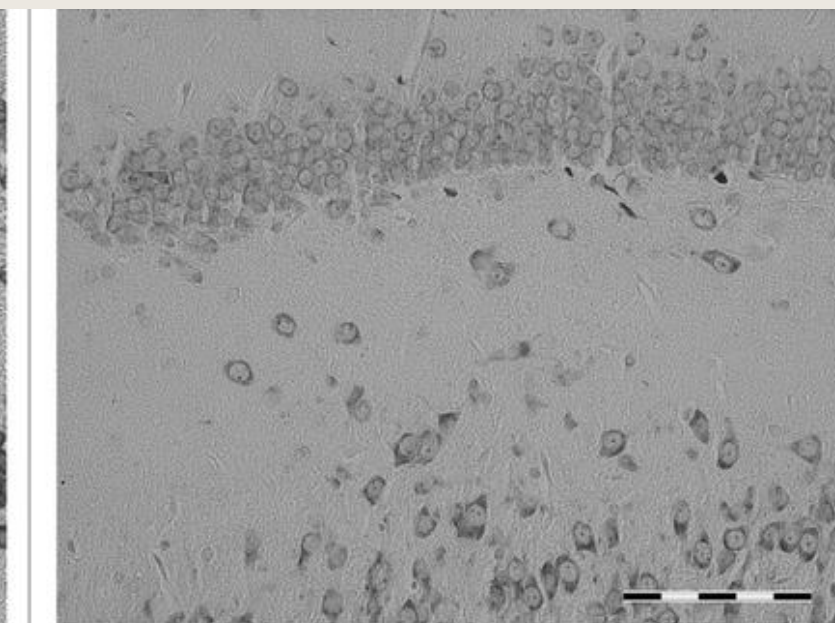
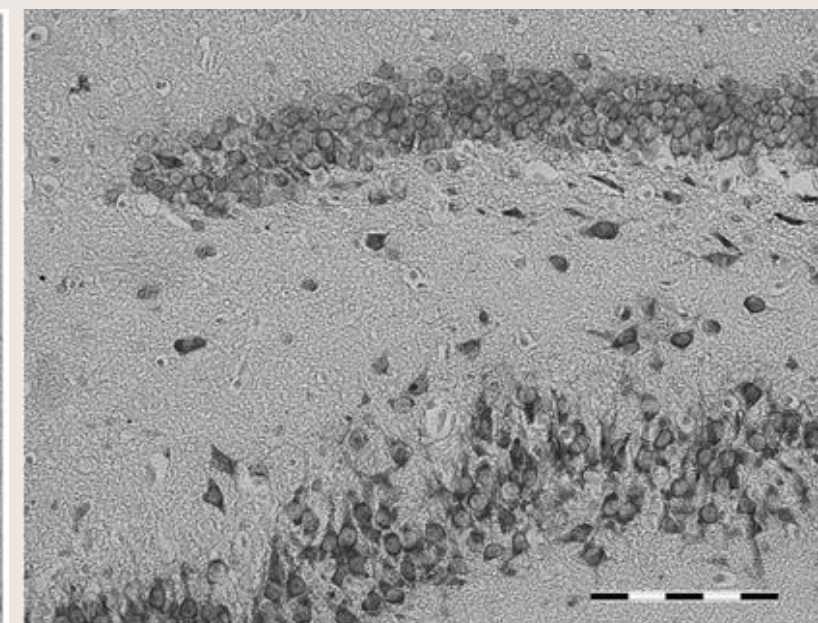
Nissel staining. Zoom x20



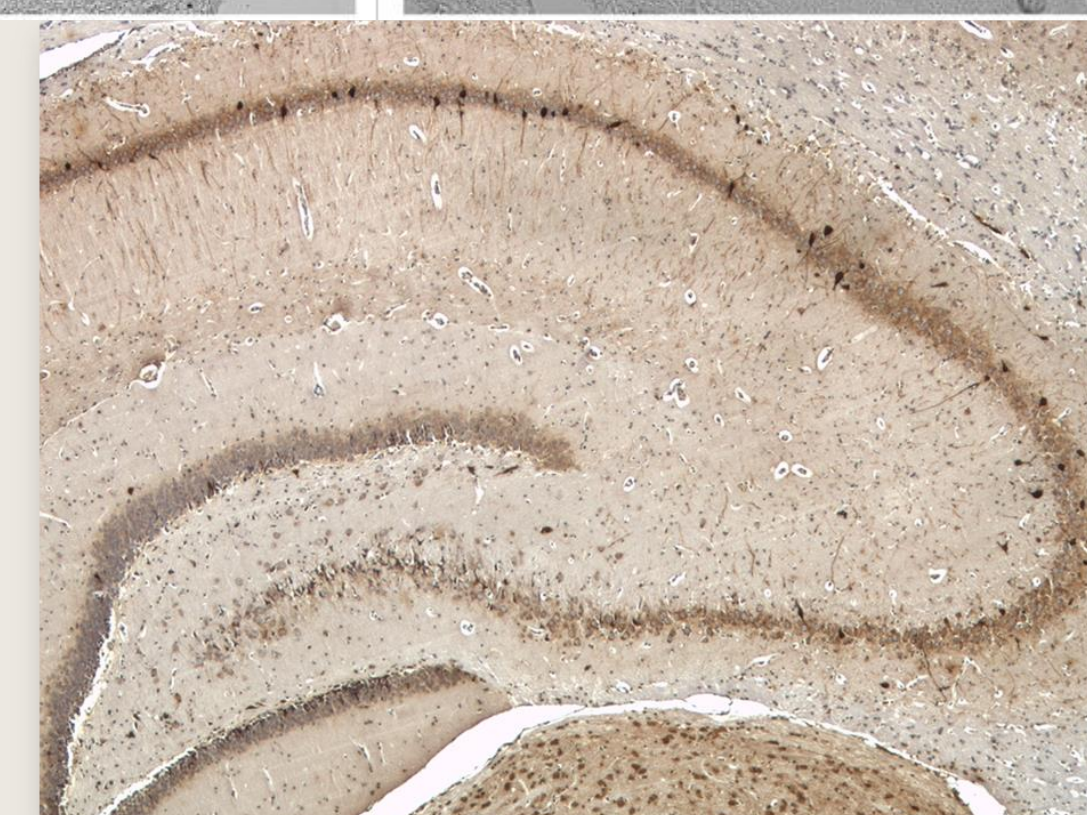
Neurons in the dentate gyrus of the rat hippocampus.

- Group I control.
- Experimental group II with experimentally induced diabetes.

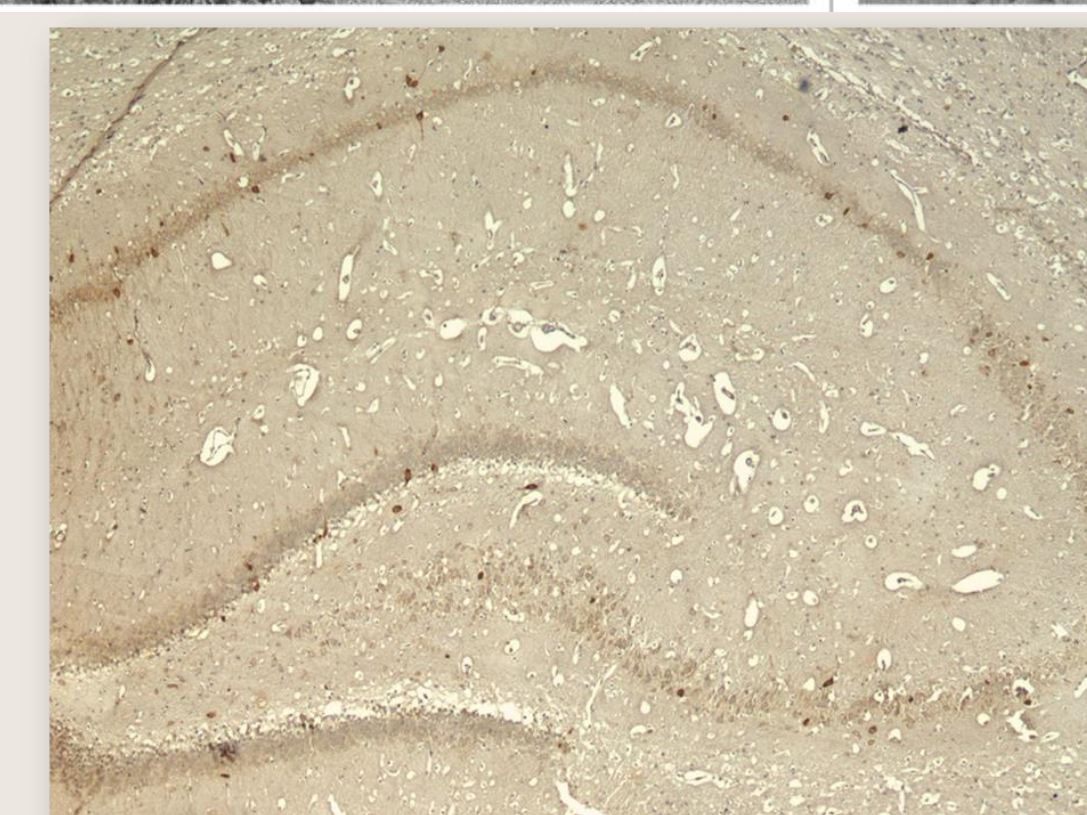
Nissel staining. Zoom x20



PV positive neurons in CA1-CA3 fields of the hippocampus and in the dentate gyrus in group I (control). Zoom x1.25



PV positive neurons in CA1-CA3 fields of the hippocampus and in the dentate cusp in group II (experimental). Zoom x1.25



Conclusions

In the brains of diabetic rats, a decrease in the number of PV-IR neurons and adverse changes in their structure are observed.