BEHAVIOR OF HINDBRAIN NEURONS DURING LATENCY OF EVOKED LOCOMOTION IN SALAMANDER

Dmitry Kagan, Igor Kagan, Mark L. Shik

Department of Zoology, G.S. Wise Faculty of Life Sciences, Tel Aviv University, Tel Aviv 69978, Israel

Transition from resting state to locomotion was elicited by repetitive electric stimulation of the low threshold "locomotor site" in the midbrain of salamander *Ambystoma tigrinum.* Delivering near threshold train of stimuli, the latency can be distended up to 15 s. Current (of 1 ms duration, usually 6 to 10 ?A) and interstimulus interval (ISI, ordinarily 80 to 200 ms) of the applied train are interchangeable for the macro-effect in certain span. Dozens of impulses of a single neuron were recorded during the transitory period. There were neurons, which responded to stimulation even if the train did not elicit locomotion. Impulses can be time-locked to stimuli, distributed in ISI or form composite response. Both latency and probability of firing could change gradually or shift abruptly during the trial. Irregular alternation of *k?1* and *k+1* stimuli between adjacent impulses was common. Accompanying fluctuations of latency (L), shown as difference between successive latencies (?L_i=L_{i+1}-L_i) could be either related to these alternations or independent. Portion of interimpulse intervals (I) containing *k* stimuli remained constant or diminished during subthreshold train. This portion could increase during near threshold train, either gradually or abruptly. Sometimes new unstable state *k-1* arose instead of *k+1* and began to alternate with *k*-state (see Inset). Modes of latency of time-locked impulses were mostly 18 to 40 ms, and the distribution of latencies could be bimodal. Later impulses could gather too, either around the middle of ISI or in its second half. The early time-locked impulses and the late pre-stimulus ones could arise in the same ISI (*k=0*).