A METHOD OF RECORDING THE ELECTROPLETHYSMOGRAM (IMPEDANCE PLETHYSMOGRAM) OF THE CAUDAL ARTERIES OF RATS

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A method of recording the electroplethysmogram of the rat tail by means of cotton fabric electrodes is described.

KEY WORDS: electroplethysmogram; caudal artery of rats.

A method of recording the electroplethysmogram (EPG) of the caudal arteries of rats with the aid of cotton fabric electrodes has been developed.

To record the EPG the rat is placed in a special chamber limiting its movements. The rat's tail under these circumstances lies horizontally on a transparent plastic slab. A pair of cotton fabric electrodes is ap-

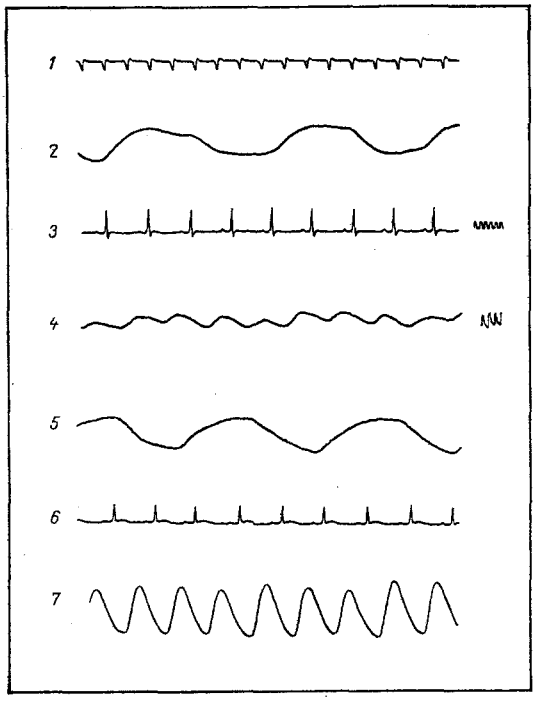

Fig. 1. Changes in EPG during subcutaneous injection of papaverine (50 mg/kg): 1) time marker (0.1 sec), 2, 3, 4) respiration, ECG, and EPG, respectively, before injection of papaverine, 5, 6, 7) the same, after injection of papaverine.

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plied to the tail so that they surround it firmly without compressing it. The width of the electrodes is 5 mm and their length a little more than the circumference of the tail (10-15 mm). The distance between the electrodes is 4-6 mm. These electrodes, soaked in physiological saline, are connected to an impedance plethysmograph (Galileo P-65). The EPG is recorded with the use of a current of 20 mA and a frequency of 74 kHz. An electroencephalograph can be used to record the EPG.

The use of cotton fabric electrodes soaked in physiological saline has definite advantages over the use of metallic electrodes: 1) Mechanical compression of the arteries resulting from firm contact with metallic electrodes is eliminated; 2) artifacts arising as a result of loose contact between the electrodes and the tissue, even when electrode paste is used, are ruled out; 3) the EPG and its changes can be observed over a long period of time without heating the tail, which sometimes has an effect on the tone of the blood vessels that is difficult to allow for and which creates additional difficulties in the experiments.

Methods described in the literature for qualitative and quantitative assessment of the EPG can also be used to analyze the EPG of the rat caudal artery [1-11].

By way of illustration the EPG of the rat tail recorded by the method described above before and after subcutaneous injection of papaverine is shown in Fig. 1.

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