

EVALUATION OF THE LOCAL RECTAL HYPOTHERMIA TECHNIQUE

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Using local rectal hypothermia in experiments on 25 rabbits, only negligible morphological changes were found histologically in the urinary bladder and rectum 1 h after cooling. Histological examination of these organs after 7 days revealed no such changes.

During the last decade local rectal hypothermia to the pelvic organs has been studied in many clinics in the USSR and elsewhere. Lowering the temperature to 25-16°C is not without its effects on the tissues of the living organism. For this reason it is necessary to investigate the effect of these temperatures experimentally on the structure of the urinary bladder and rectal tissues.

Experiments were carried out on 25 sexually mature rabbits. Introduction of the tip (its diameter was calculated specially for the rabbit*) of the author's specially designed "hypotherm" (Fig. 1) and incision of the anterior abdominal wall were carried out under general ether anesthesia. The temperature of the bladder and of the anterior wall of the rectum was measured by means of an electric thermometer. Cooling was carried out for 10 min.

Altogether five series of experiments were performed: series I consisted of control rabbits. The animals of series II and III were cooled in the region of the bladder and rectum to 25°C through an incision in the anterior abdominal wall. The rabbits were sacrificed and material taken for investigation in series II 1 h after cooling and in series III on the 7th day after cooling. In series IV and V the rectal temperature of the rabbits was lowered to 16°C. In series IV the animals were sacrificed and material taken for investigation 1 h after cooling, and series V on the 7th day. The rabbits were killed by injecting 10 ml air into the marginal vein of the ear. When the heart stopped beating the abdomen was opened through a low midline incision. The macroscopic picture was described without removing the organs; no pathological changes were discovered under these circumstances.

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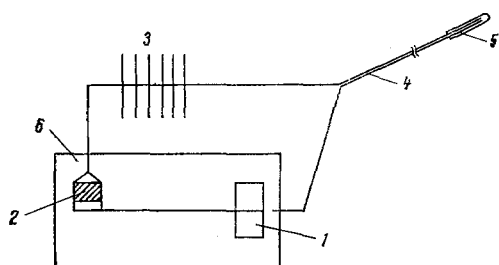


Fig. 1. Diagram of the local rectal "hypotherm".
1) Electric motor; 2) compressor; 3) condenser;
4) flexible hose for supplying coolant (freon-12)
to vaporizer; 5) vaporizer-tip; 6) air-tight chamber filled with freon.

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Morphological investigation of the bladder and rectum of the animals subjected to hypothermia showed the following slight changes. Focal desquamation of the epithelium of the mucous membrane and slight inflammatory infiltration of the mucosa and submucosa were found 1 h after cooling in these areas, together with conjection of the blood vessels of the submucosa. No changes were found in the muscular layer. No morphological changes could be seen in the wall of the rectum 1 h after hypothermia. Investigation of the wall of the bladder from all experimental animals remaining under observation for 7 days showed no morphological changes. Solitary hemorrhages and concentrations of lymphocytes were observed in the rectal wall of three animals. Such changes are also observed under normal conditions. The small hemorrhages found were evidently artefacts due to injury to the blood vessels when the material was taken for investigation from the recently killed animal.

No significant morphological changes were thus found in the tissues of the urinary bladder and rectum in the immediate and late periods after exposure to cold.