diols by nature, are known to have a mitogenic effect in other organs [8]. These compounds exhibit their antiulcer effect in very small doses, and as was shown previously, their metabolic products are excreted quite rapidly by the organs [1]. The study of metabolism of sex steroids in biopsy material from patients with duodenal ulcer would be of considerable interest in this connection.

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PREVENTION OF WOUND SUPPURATION

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Known methods of wound disinfection, including external aplication of antiseptic solutions, are only relatively effective. It will be evident that after abundant irrigation with antiseptic soltuions microorganisms will nevertheless remain in the tissues and will induce suppurative inflammation of the wound [1-6, 8].

The reason for intensive irrigation was that the agents of suppurative processes find in a wound favorable conditions for growth and multiplication, for necrotic tissues and blood clots are present there. Conditionally pathogenic bacteria, in dead tissues, are not exposed to the lethal action of factors of the cellular and humoral defense of the organism.

We have accordingly studied the action of 0.3% NaCl solution on the length of stay of conditionally pathogenic microorganisms in a wound. The safety and harmlessness of injection of 0.3% NaCl solution is not an antiseptic. The mechanism of the prophylactic action of the hypotonic solution is evidently associated with the effect of a combination of physical factors on cells of conditionally pathogenic microorganisms. The detailed investigation of the mechanism of its action is therefore indicated through the joint efforts of clinicians, microbiologists, and physicists.

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EXPERIMENTAL METHODS

Altogether four series of experiments were undertaken: 40 mice were used in series I, 30 guinea pigs in series II, nine rabbits in series III, and 14 rabbits in series IV. Operation wounds of 20 patients also were irrigated. A sterile 0.3% NaCl solution was used.

In series I 0.2 ml of a suspension containing $2 \cdot 10^8$ Escherichia coli, Staphylococcus, or Candida cells was injected into the region of the lateral surface of the right thigh. From 10 to 15 min later, the tissues around the region of infection were intensively saturated by infiltration with 0.3% NaCl soltuion. Albino mice infected with the same dose of microbial cells but without subsequent treatment with 0.3% NaCl solution served as the control. The animals remained under observation for 5 days. In the experiments of series II the conditions were the same. In series III the effectiveness of 0.3% NaCl solution was studied in rabbits. Under superficial ether anesthesia incised wounds of the skin and muscles, covering an area of 100 mm^2, were inflicted in the region of the lateral surface of the hind limb. The wounds were then infected with a suspension of $2 \cdot 10^8$ E. coli and Staphylococcus cells. The tissues surrounding and in the depth of the skin and muscle wound were tightly infiltrated 10 min later with the 0.3% NaCl solution.

In series IV 2 ml of a suspension of 10^9 cells of Staphylococcus and E. coli was injected intramuscularly into the lateral surface of the thigh of 10 rabbits. Infiltration of the region of infection with 0.3% NaCl solution was then carried out on 6 animals. Control animals received an intramuscular injection of the corresponding bacterial suspension. The animals remained under observation for 10 days. The osmotic pressure of the 0.3% NaCl solution was 2.58 h atm at 37°C, pH 6.25, and ionic strength M = 0.053.

EXPERIMENTAL RESULTS

In the experimental animals of series I no signs of inflammation were found 48 h after injection of the microbial suspension followed by infiltration with 0.3% NaCl solution. The animals were active and ate their food well. On the 5th day the animals were withdrawn from the experiment. Microbiological investigation showed no microorganisms in the region of infection of the tissues.

In the control, suppuration was found at the site of injection of all three species of conditionally pathogenic microorganisms in all the animals. The corresponding microorganisms were isolated from the pus by bacteriological investigations.

In the experiments of series II suppuration was observed in guinea pigs infected with conditionally pathogenic microorganisms only in the case of injection of a culture of Candida cells (five animals), whereas in the control suppuration was observed in 14 of 15 animals. Infiltration with 0.3% NaCl solution thus prevented development of suppurative inflammation in the animals after infection with a suspension of Staphylococcus and E. coli. However, the 0.3% NaCl solution did not prevent the development of suppuration in guinea pigs infected with a suspension of Candida cells.

In the experiments of series III, on rabbits infected with E. coli and Staphylococcus, in no case was wound suppuration observed after infiltration with 0.3% NaCl solution. To begin with the wounds in the animals of this series were covered with a fibrin film. After 48 h edema of the wound edges was reduced. The wounds healed without suppuration in all rabbits. In the control suppuration was found in tissues of all animals at the site of injection of the microbial suspension.

In the rabbits of series IV no pathological changes were found throughout the period of observation in the region of injection of the microbial suspension. In the control animals, 2 days after infection an inflammatory reaction appeared in the region of injection of the microorganisms, with the formation of an abscess on the 6th day of the experiment. Pure cultures of Staphyloccocus and E. coli were isolated from the abscesses.

The experiments thus showed that 0.3% NaCl solution has a preventive action in animals of three species, preventing the development of suppuration after artifical infection of wounds with Staphylococcus and E. coli. On the basis of these data, 0.3% NaCl solution was suggested for irrigation of infected wounds in 20 patients after various clean operations. The results of observation of these patients in the postoperative period showed that the wounds heated by first intention. In the control group suppuration of the wounds was observed in two patients after similar operations.

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