that whereas considerable progress has been made in the study of the functional role of central opioid receptors, the physiological role of the peripheral binding sites of opioids is only little understood. However, the quite extensive distribution of these centers may be evidence of the existence of hitherto unknown opioidergic regulatory mechanisms.

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USE OF NEUROTROPIC DRUGS TO PREVENT APHTHOUS STOMATITIS

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Disturbances of neurotropic control during frequently repeated exposure to stress, of which the most important is due to impulses arising from injured organs of the digestive system, occupy an essential place among the factors involved in the mechanism of development of aphthous lesions of the oral mucosa [2, 5-13]. However, metabolic disturbances in the tissue substrate of the oral mucosa (as the direct expression of disturbed nutrition) have not yet been explained.

The aim of the present investigation was to study changes in levels of sympathetic nervous system mediators in the oral mucosa associated with injury to the abdominal organs and the possibility of using neurotropic drugs to prevent the development of aphthous lesions.

EXPERIMENTAL METHOD

Experiments were carried out on 22 dogs weighing from 7 to 15 kg and aged from 3 to 5 years. All the animals were subjected to quarantine for 3 weeks in the animal house. The mucosa of all the dogs was intact. Pentobarbital sodium in a dose of 0.03 g/kg was used as the anesthetic.

The animals as a whole were divided in three groups: 1) control, consisting of eight healthy dogs; 2) seven dogs in which aphthous lesions on the oral musoca were produced experimentally by ligation of the common bile duct [8]; 3) seven dogs receiving an intraperitoneal injection of the β-adrenoblocker propranolol (anaprilin, obsidan) in a dose of 1 mg/kg 30 min before ligation of the common bile duct. Areas of the oral mucosa were excised from all the animals 2 h after the operation from sites most frequently affected by pathological changes (the cheek, the retromolar space (RMS), and the adrenalin and noradrenalin (NA) concentrations in them were determined [1].

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TABLE 1. Catecholamine Concentrations (in μg/g) in Oral Mucosa of Dogs after Ligation of Common Bile Duct Preceded by Injection of Adrenoblocker (M ± m)

Group of animals	Test object	Adrenalin	NA
1	Cheek	0,116±0,018	0,21±0,03
	RMS	0,141±0,023	0,23±0,029
2	Cheek	0,270±0,043*	0,340±0,046*
	RMS	0,260±0,035*	0,480±0,059*
3	Cheek	0,124±0,012**	0,24±0,028
	RMS	0,21±0,046	0,32±0,027***

Legend. *P < 0.05 compared with control, **P < 0.05 compared with group 2.
[Either the three asterisks should be two, or their explanation is omitted in the Russian original — Editor.]

EXPERIMENTAL RESULTS

The adrenalin and NA concentrations in the mucosa of the cheek and RMS of the animals of group 2, 2 h after ligation of the common bile duct, were significantly higher than in the control. In animals of group 3 the adrenalin concentration was unchanged 2 h after the operation, whereas the NA concentration, although a little higher than in the control, still remained significantly lower than in the dogs of group 2 (Table 1).

The results thus confirmed that 2 h after ligation of the common bile duct increased secretion of the sympathatic nervous system mediator began to take place in the oral mucosa under the influence of nervous impulses from the injured abdominal organs. It may therefore be tentatively suggested that one of the mechanisms of development of pathological changes in the oral cavity after ligation of the common bile duct is excessive efferent impulsation along sympathetic fibers with the release of large quantities of NA.

High NA concentrations, acting directly on the tissue adrenoreceptors, caused disturbances of tissue metabolism. An excess of NA, as we know, first damages the structure and impairs the function of the mitochondria, as a result of which cellular energy metabolism is inhibited. The creatine phosphate and cAMP levels fall and, as a result, all energy-dependent synthetic processes are depressed [3]. Meanwhile NA, acting on the vascular adrenoreceptors, induced vascular spasm, with the development of capillary stasis, hemorrhage into the mucous membrane, and local hypoxia which, in turn, contributed to inhibition of cellular energy metabolism [4].

These factors may be the initial stages of the pathogenetic mechanisms which subsequently give rise to structural lesions in the oral mucosa.

Preliminary injection of propranolol, before ligation of the common bile duct, into the animals of group 3 lowered the adrenalin and NA concentrations in the oral mucosa below their levels in the animals of group 2. It can thus be postulated that the β-adrenlblocker propranolol, which selectively blocks the transmission of nervous impulses in the sympathetic division of the autonomic nervous system, interrupts reflex influences from the injured abdominal organs and protects the tissues of the oral mucosa against the damaging action of high concentrations of NA.

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