

INFLUENCE OF BETA-ADRENOBLOCKADE WITH PROPRANOLOLUM UPON BLOOD-THROMB-FORMATION IN MICE

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It is known that the haemostasis is a complex and prolonged process which is realized by the participation of several groups of functional-structural components (Russyayev, Kuznick — 1977; Barkagan — 1979; Guyton — 1981). In the available literature there are enough facts for the role of the nervous system in supporting the blood in liquified form and its thromb-formation (Markossyan — 1971; Sokratov et al. — 1975; Kudryashov et al. — 1981), while the participation of the adrenergic system including the beta-adreno-receptors, is still not enough studied. The interest towards the role of these receptors becomes greater due to the fact that they were found on the thrombocyte membranes (Abdulla — 1969; Haslam — 1973).

Having in mind all that and the contradictory, even few, investigations on the role of adrenergic receptors for the thromb-formation (TF) we had for an object of the present study to investigate the effect of one-day, 3-day and 6-day treating with propranololum (nonselective beta-adrenoblocker) upon the number of the thrombocytes, recalcification and its duration after Howell, prothrombinic time and thrombelastogramme (TEG) in conditions "in vivo" in mice.

Materials and methods

The experiment covers 106 white female mice, race "Wister", weighing 140—160 g; 54 of them were experimental and the rest 52 — control. The animals from the first group were treated with propranololum in a dose 5 mg/kg B. W. (Obsidan — DDR), injected intraperitoneally in sterile conditions, twice a day with 10 hours pause. Besides that we divided the animals from both groups to another subgroups. Animals from the first of the latter were treated with a single dose per day beta-adrenoreceptor blocker, from the second — same treatment but in a 3-day schedule, third — 6-day. The control animals were treated by a saline solution in the same dose.

Before the treatment the thrombocyte number of all animals was established after the method of Feisley and Ljudin; at the end of the experiment the same was done together with the determination of recalcification time after Howell, prothrombinic time and TEG. The results were calculated after the variational statistical method.

Results and discussion

The results are presented on figures N. N. 1, 2, 3.

It is obvious that the 1-day treatment with propranololum decreases the thrombocyte number considerably — with 30.6% ($p < 0.01$), whereas the most expressed decrease was established after the 3-day schedule — with 39.04%

($p < 0.001$). After the 6-day treatment the decrease of thrombocyte number was unreliably changed — with 15.32% only.

Recalcification time shortened considerably too — with 58.85% ($p < 0.01$) after the 1-day treatment with propranololum, whereas after 3-day schedule

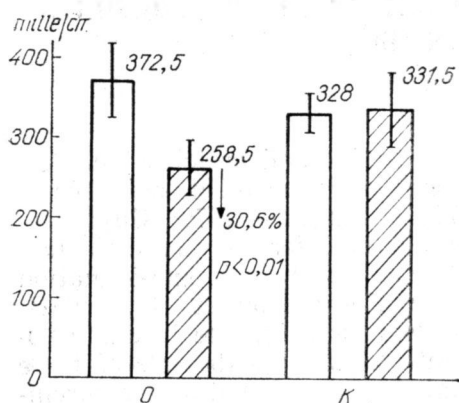


Fig. 1

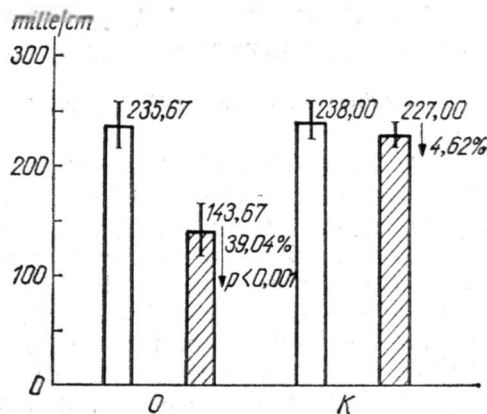


Fig. 2

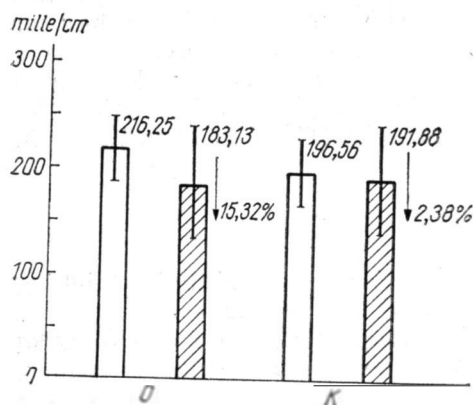


Fig. 3

the decrease was with only 31.72%, even less after 6-day treatment — with 9.48%.

The determination of the prothrombinic time of the animals from both groups shew the following: 1-day — a decrease with 47.63% ($p < 0.025$), while with 3-day and 6-day the decrease was 6.19, resp. 28.14%.

The results from the thromelastogramme shew a tendency to shortening of the reactional time (r) with 1—1.5 time when compared to the control group.

Coagulation time (K) of the experimental animals (excluding the 6-day treatment) was also 1—2 times shorter in comparison with the control group. The maximum amplitude (mA , resp. $m\Sigma$) in experimental animals is slightly less than the mA TEG in the control animals ($p < 0.10$).

The interpretation of our data is not easy not only due to the complexity of the studied processes, but also due to the scarce bibliographical data.

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ВЛИЯНИЕ БЕТА-АДРЕНОБЛОКАДЫ ПРОПРОНАЛОЛОМ НА НЕКОТОРЫЕ ПОКАЗАТЕЛИ СВЕРТЫВАНИЯ КРОВИ У КРЫС

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РЕЗЮМЕ

Авторы изучают число тромбоцитов, время рекальцификации, протромбиновое время и тромбоэластограмму у крыс после третирования бета-адреноблокатором пропранололом в течение одного, трех и шести дней. Устанавливается достоверное уменьшение числа тромбоцитов при однодневном и трехдневном третировании. Рекальцификационное время и протромбиновое время короче всего при однодневном третировании и длиннее при остальных постановках. Тромбоэластограмма указывает на сокращение времени реакции и времени коагуляции. Уменьшение числа тромбоцитов по-видимому связано с нарушением мембранным интегритетом тромбоцитов, а сокращение времени рекальцификации и протромбинового времени могут быть проявлением увеличенной активности некоторых тромбоцитных и плазменных факторов свертывания крови.