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JOURNAL ARTICLE

Unilateral injection of neuropeptide Y decreases blood flow in the injected testis but may also increase blood flow in the contralateral testis

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Neuropeptide Y (NPY) receptors have recently been described in intratesticular arterioles, but the role of NPY in testicular blood-flow regulation has not been examined. To explore this, we administered NPY in various doses (0.01-10 microg) via intratesticular injections and studied testicular microcirculation using a laser Doppler flow meter. NPY injection shows a dose-response pattern, with 1 microg (the most potent dose) causing a decrease (-42.4 +/- 3.7%, $P < 0.00005$) in blood flow in the ipsilateral testis of all the animals and an increase in blood flow in the contralateral testis (+17.2 +/- 5.6%, $P = 0.03$, $n = 25$ animals). The response in the contralateral testis was variable. A clear-cut increase was seen in 19 of the 25 animals examined, whereas either no response or a slight decrease was seen in the remaining six. The contralateral increase, which was not seen in the hindpaw on the same side, did not occur when the neuronal connections to the testes were blocked by injection of local anesthetics into the spermatic cord, either on the NPY-injected side or on the contralateral side. Our results suggest that NPY may serve as a vasoconstrictor in the testis, probably by acting on the NPY-Y1 receptors present on intratesticular arterioles. Local injection of NPY causes a major decrease in blood flow in the injected testis. This decrease is followed in the majority of animals studied by an increase in blood flow in the contralateral testis, an effect that seems to depend on neuronal mechanisms. This observation suggests that the testes may communicate under certain situations. The functional consequences of this remain to be elucidated.

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