ESTROGENS ARE ABLE TO MODULATE FACIAL INFLAMMATORY PAIN : A STUDY IN AROMATASE KNOCK-OUT MICE USING THE FORMALIN MODEL

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The mechanisms by which estrogens may be responsible for the higher prevalence of certain head and facial pains in females are not known. We studied the role of gender and of estrogens on inflammatory pain using the orofacial formalin test in mice. We measured the frequency of rubbing of the formalin-injected lip in male and female estrogen-deficient aromatase knock-out mice (ArKO, *Cyp19*) with and without pre-treatment with ß-estradiol (5µg, s.c.) and in their wild-type littermates (WT).
There was no difference in nociceptive behaviour between male and female WT mice neither in the first acute phase of pain nor in the second "tonic" phase. By contrast, lip rubbing was significantly more pronounced in ArKO than in WT females during the second pain phase. ArKO males did not differ significantly from their WT littermates regarding phases 1 and 2, but they displayed a third phase of pain behaviour 36 min. after the formalin injection. In ArKO mice treated with ß-estradiol the differences in second phase for females and third phase for males were not detectable anymore.
Taken together, these results confirm the role of estrogens in the modulation of inflammatory facial pain. They indicate that estrogens have an antinociceptive effect and that the different behaviour in ArKO mice is not due to developmental changes. The differences between male and female ArKO mice suggest that underlying control mechanisms of pain differ between genders.