Asthma, respiratory allergy and cough

SELECTED PARAMETERS OF COUGH SENSITIVITY DURING THE MENSTRUAL CYCLE

N. Kavalcikova - Bogdanova[1], *J. Plevkova[1], L. Kovacikova[1], T. Buday[1], K. Biringer[2], J. Sivakova[2], V. Calkovsky[3], M. Antosova[4]
[1]Comenius University in Bratislava, Jessenius Faculty of Medicine in Martin, Department of Pathological Physiology (Martin, Slovakia)
[2]Comenius University in Bratislava, Jessenius Faculty of Medicine in Martine, Clinic of gynaecology and obstetrics (Martin, Slovakia)
[3]Comenius University in Bratislava, Jessenius Faculty of Medicine in Martine, CLinic of otorhinolaryngology, head and neck surgery (Martin, Slovakia)
[4]Comenius University in Bratislava, Jessenius Faculty of Medicine in Martine, Department of Physiology (Martin, Slovakia)

Question: From the literature it is known that females cough more than males (*Fujimura, 1990*) and have heightened sensitivity of cough reflex (*Dicpinigaitis & Rauf, 1998*). What has not been elucidated yet are the mechanisms of these gender differences, although they are believed to be caused by hormones as they occur at puberty and are highlighted in late phase of adolescence *(Varechova et al., 2006).* Chronic cough patients are also more often females, some of them experiencing premenstrual worsening of their symptoms. The aim of our study was to determine the effect of female sexual hormones on cough reflex sensitivity, urge to cough, sound of voluntary and induced coughs, laryngeal sensitivity and FeNO in healthy volunteers with normal menstrual cycle (MC) and females taking oral contraceptives (OC).

Methods: 11 healthy females with normal MC and 11 females taking OC underwent ENT exam and lung functions test to meet the inclusion criteria. Cough sensitivity and other parameters were examined in follicular and luteal phase of MC according to ERS Guidelines (2007). Level of oestrogen, progesterone, testosterone, prolactin, LH and FSH were determined from blood and the phase of MC was confirmed by USG.

Results: Cough sensitivity expressed as C2 and C5 increased significantly in luteal phase from 91.2 ± 1.75 to 58.7 ± 1.59 (GM with 95%CI) for C2 and 364.9 ± 1.90 to 250.0 ± 2.12 (GM with 95%CI) for C5, $p<0.05$ for both. FeNO levels and FEV1/FVC also followed the cyclic pattern in normal MC group, but not in OC. Urge to cough is similar in both groups, with premenstrual drop ($p<0.05$). Correlation analysis showed negative correlation of C2 & C5 with oestrogen levels in follicular phase and luteal phase ($r=-0.44$) and also negative correlation between C2 & C5 and progesterone in luteal phase ($r=-0.19$).

Conclusion: Our data document clear hormonal influences on the cough sensitivity measured by capsaicin test and also indicate that premenstrual worsening of chronic cough could be caused by hormonally influenced rise of TRP channels activity with stronger correlation to oestrogen then progesterone.