Asthma, hypersensitivity pneumonitis and cough

0005
Significance of chough response characterization in female guinea pigs for basic cough research

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Epidemiological studies indicate, that overwhelming majority of patients treated on specialized cough clinics for chronic cough are postmenopausal women. Moreover, homogeneity amongst these patients worldwide suggests a distinct clinical entity, etiopathogenesis of which remains unclear. In basic cough research, only models utilizing male animals are used and upon further investigation why the literature databases fail to provide an answer.

Therefore, we decided to characterize cough response in female guinea pigs, which could provide a model suitable for study of hormonal influences on cough physiology. First experiment utilized Dunkin-Hartley guinea pigs (8 females and 9 males – control group) were repeatedly exposed to aerosols of 0.4M citric acid, 50μM capsaicin and distilled water for 10 minutes in whole-body plethysmograph. Airflow traces and sounds were simultaneously recorded. Aim of second experiment was the construction of dose-response curves for citric acid and capsaicin utilizing another 5 female and 5 male guinea pigs.

Average number of coughs to citric acid in females (12.5±3.5 – 24.5±6.5 – 18.5±6) did not differ from males (13±5.5 – 18±2.5 – 19±4). Number of coughs to capsaicin did not differ between females (15.5±3 – 16±2.5 – 15±6) and males (8±2 – 10±2.5 – 14±6), neither did number of coughs in response to distilled water (females: 5±2 – 7.5±3.5 – 5.5±3.75; males: 5±2 – 5±3 – 6±2). Cough latency showed similar tendencies. Dose-response curves did not differ significantly between genders.

Based on our results we conclude, that cough response obtained in naïve female guinea pigs over time is relatively stable and comparable to that of male guinea pigs, which is documented by similar cough response and its variability. However, these experiments have to be conducted in sensitized animals, because hormonal influences can be more evident in pathologic conditions.

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