



URTICARIA, ANGIOEDEMA

PATIENTS WITH CHOLINERGIC URTICARIA EXHIBIT INCREASED NUMBERS OF CUTANEOUS MAST CELLS

Yiyu Wang⁽¹⁾ - Jorg Scheffel⁽¹⁾ - Marcus Maurer⁽¹⁾ - Sabine Altrichter⁽¹⁾

Charite, Dermatology, Berlin, Germany⁽¹⁾

Background: Cholinergic urticaria (CholU), a frequent form of chronic inducible urticaria, is characterized by the development of itchy wheals in response to physical exercise and passive warming.

Mast cells (MCs) are primary effector cells in allergy, and are thought to be of pathophysiological importance in chronic urticaria (CU). In Cholinergic urticaria (CholU), a frequent form of chronic inducible urticaria provoked by physical exercise or passive warming, MCs activation and degranulation are considered to be responsible for wheal and itch formation, however, the mechanisms of MC activation are not yet well understood.

Objective: To assess MC numbers in skin of CholU patients before and after physical exercise and compared it to a cohort of healthy controls (HCs).

Materials and Methods: Twelve HCs and thirteen CholU patients underwent pulse-controlled ergometry. CholU patients and HCs were assessed for the onset of sweating, CholU patients also for the onset of whealing. Punch biopsies of the skin before and after provocation were taken and stained for MC numbers using Naphthol AS-Dichloroacetate (AS-D staining) and toluidine blue staining. In CholU patients, the biopsy was taken from the wheal after provocation.

Results: There were significant higher absolute numbers of mast cells in the skin of CholU patients (44 per mm²) compared to the HCs (26 per mm², $p=0.03$) before provocation. Increased MC numbers were observed in all dermal layers, however, with the biggest and most significant differences in the superficial and in the deeper layers of the dermis. Interestingly, lesional skin showed a trend to slightly higher, albeit not significant, numbers of MC compared to randomly selected skin before provocation,

Conclusions: Based on these results, it is conceivable that higher mast cell numbers in the skin of CholU patients compared to healthy skin might contribute to the pathogenesis of the disease.

