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Title: Clinical relevance of positive skin prick test to house dust mite in Portugal and Finland

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Body: Prevalence of positive skin prick test (SPT) to house dust mite *Dermatophagoides pteronyssinus* (Dp) in subjects sent to allergy testing owing to symptoms range from 81% in Portugal to 37% in Finland. Due to climatic differences, indoor Dp is readily found in Portugal but not in Finland. We compared the clinical relevance of positive SPT to Dp in Porto and Helsinki. A total of 130 patients (75 Porto, 55 Helsinki) participated; 81 with respiratory symptoms, ≥ 8 years, referred to Hospital São João, Porto or Skin and Allergy Hospital, Helsinki, were included if they had a positive SPT (wheal ≥ 3 mm) to Dp (LETI). Half (n=41) were monosensitized to Dp while the others were polysensitized. 49 patients with negative SPT to Dp were included as controls. After informed consent a double blind placebo controlled conjunctival challenge (CC) with Dp was performed (LETI). Diagnosis of asthma, rhinitis or conjunctivitis was set after medical consultation. Conjunctival challenge to Dp showed a sensitivity of 88% and specificity of 96% in terms of concordance of the SPT and CC results. A wheal size greater than 4.8mm in Porto and 3.5mm in Helsinki predicted a positive CC (Porto, AUC=0.986; Helsinki, AUC=0.963). Two patients in the control group showed a positive CC. In Porto the patients with positive CC to Dp had an increased risk for asthma (OR 9.3, 95%CI 2.4-5.7), in Helsinki the risk was increased for rhinoconjunctivitis (OR 4.9, 95%CI 1.8-13.4). The results indicate that a strongly (≥ 4.3 mm) positive SPT to Dp may be a reliable indicator of clinically relevant sensitization in mono and polysensitized subjects. In Portugal positive SPT to Dp is often associated with asthma, in Finland with rhinoconjunctivitis.