Specific allergy to *Penaeus monodon* (seawater shrimp) or *Macrobrachium rosenbergii* (freshwater shrimp) in shrimp-allergic children


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BACKGROUND: Allergy to specific shrimp species has not been studied systematically by oral challenges. A comparison of allergy to different shrimp species, especially seawater or freshwater varieties treatment, would be useful in testing shrimp-allergic subjects. OBJECTIVE: The aim of the study was to identify cases of specific allergy to seawater shrimp, *Penaeus monodon* (Pm), or freshwater shrimp, *Macrobrachium rosenbergii* (Mr), among shrimp-allergic children. Comparisons of skin tests using commercial and crude shrimp extracts plus the prick-to-prick (PTP) method were investigated.

METHODS: Sixty-eight children with a history of shrimp allergy and skin tests positive to shrimp were orally challenged to both shrimp species. Reactivity to skin prick tests using extracts of Pm (PmSPT), Mr (MrSPT), commercial shrimp (ComSPT), and PTP tests (PmPTP, MrPTP) was compared.

RESULTS: Food challenges identified specific allergy to Pm and Mr in 17.65% and 23.53% of the subjects, respectively. Positive and negative challenges to both shrimp species were found in 47.06% and 11.76% of the subjects, respectively. Correlations between the mean weal diameter (MWD) from ComSPT-PmSPT, ComSPT-PmPTP, ComSPT-MrPTP, PmSPT-PmPTP and MrSPT-MrPTP, but not ComSPT-MrSPT, were observed. The MWD from PmSPT and PmPTP were significantly larger in patients with positive than negative challenges to *P. monodon* (P<0.05). There was a trend that MWD from MrSPT were larger in patients with positive than negative challenges to *M. rosenbergii* (P=0.058). In the Pm allergy group, PmSPT with an MWD of 30 mm provided 80% predictive probability for positive challenges. PmPTP and ComSPT with an MWD of 22.5 and 20 mm provided 95% predictive probability, respectively. In the Mr allergy group, MrSPT with an MWD of 30 mm provided 95% predictive probability.

CONCLUSION: Specific allergy to Pm or Mr was confirmed by food challenges. SPT using crude extracts and the PTP test are useful tools for screening shrimp sensitization before a food challenge. The predictive probability of SPT is helpful where a food challenge is not feasible.

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