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Title: Occupational asthma induced by exposure to high and low molecular weight agents. Similarities and differences

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Body: Introduction: The aim of this study was to analyse possible differences between occupational asthma (OA) caused either by agents of high molecular weight (HMW), whose mechanism of action is always IgE-mediated, or by agents of low molecular weight (LMW) whose mechanism is often unknown. Methods: The study included 79 patients with OA diagnosed by specific inhalation challenge (SIC). Anthropometric characteristics were analysed, as well as atopic status, profession, latency period, asthma severity, lung function tests and SIC results. Results: Twenty-three patients (29%) were diagnosed with OA induced by HMW agents, and 56 (71%) with OA induced by LMW agents. In the LMW-induced group, asthma was intermittent in 21 (38%), mild persistent in five (9%), and moderate persistent in 30 (53%). In the HMW-induced group, it was intermittent in eight (35%), mild persistent in eight (35%), and moderate persistent in seven (30%) ($p = 0.014$). Paradoxically, the dose-response ratio in the methacholine test was higher in patients exposed to HMW agents (HMW 56.3 (131.1), LMW 18.5 (23.8), $p = 0.012$). Most HMW-exposed patients (78%) showed early response to SIC, whereas in those exposed to LMW response was dual (50%) or atypical (21%) ($p = 0.0001$). No differences were found in latency periods, smoking habit, atopic status or in the other lung function studies. Conclusions: Though there are no clear reasons for the differences, the OA caused by LMW agents appears to be more severe than that caused by HMW agents. The distinct pattern of response to the SIC suggests that the mechanism of action depends on the type of agent.