The remodelled tracheal basement membrane zone of infant rhesus monkeys after 6 months of recovery.

BACKGROUND: In previous studies, we showed that repeated exposure to (1) house dust mite allergen (HDMA) (Dermatophagoides farinae) caused thickening of the basement membrane zone (BMZ) and (2) HDMA+ozone (O3) caused depletion of BMZ perlecan and atypical development of BMZ collagen (irregular thin areas<2.0 microm in width).

OBJECTIVE: The purpose of this study was to determine if these remodelling changes were reversible after 6 months of recovery.

METHODS: Rhesus monkeys were exposed to a regimen of HDMA and or O3 or filtered air (FA) for 6 months. After the exposure protocol was completed FA and O3 groups were allowed to recover in FA for 6 months. The HDMA and HDMA+O3 exposure groups recovered in a modified environment. They were re-exposed to HDMA aerosol for 2 h at monthly intervals during recovery in order to maintain sensitization for pulmonary function testing. To detect structural changes in the BMZ, collagen I and perlecan immunoreactivity were measured and compared to data from the previous papers.

RESULTS: The remodelled HDMA group had a significantly thicker BMZ and after 6 months of recovery the width had not regressed. In the remodelled BMZ of the HDMA+O3 group, perlecan had returned to the BMZ after 6 months
of the recovery protocol, and the thin, irregular, collagen BMZ had been resolved.

**CONCLUSION:** In summary, this study has shown that: (1) The width of the remodelled HDMA BMZ did not regress during a recovery protocol that included a sensitizing dose of HDMA. (2) The atypical collagen BMZ in the HDMA+O3 BMZ was resolved in the absence of O3. (3) Depletion of perlecan from the BMZ by O3 was reversed by recovery in the absence of O3.

DOI
10.1111/j.1365-2222.2004.02004.x

Alternate Journal
Clin. Exp. Allergy

PubMed ID
15248862

Grant List
ES04311 / ES / NIEHS NIH HHS / United States
ES05707 / ES / NIEHS NIH HHS / United States
ES06700 / ES / NIEHS NIH HHS / United States
P01 ES00628 / ES / NIEHS NIH HHS / United States
P01 ES11617 / ES / NIEHS NIH HHS / United States
RR000169 / RR / NCRR NIH HHS / United States