

REVIEW

Possible explanation for the different trends of asthma and allergy in east and west Germany

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Two large studies [1,2] have just been completed showing the same results: persons born before 1950 have the same prevalence of atopy (specific IgE and skin-prick test) in former east and west Germany. The same holds true for persons born between 1950 and 1960. However, for those born in the west after 1960, atopy increased up to 150% of the postwar rate, while the rate in the east changed only marginally. A clear drifting apart, suggesting that influences in early childhood are mostly relevant for the initiation of an allergy and that something changed in the west in the 1960s which was very important for the development of allergies.

Until 1945 the population living in east and west Germany was homogeneous, with a similar ethnic background, similar housing conditions and living conditions, a uniform health care system and one language. After 1945 an arbitrary border was built up, and the two parts became two different political and economic systems. Gradually and slowly at the beginning, and more pronounced later, the ways of living developed differently. In east Germany the population under the communist system had limited contacts with other countries. Mainly domestically produced food was available. Only rarely did the population have access to exotic fruits and vegetables. Energy conservation within was not necessary due to low energy prices, subsidized by the state. Regulation of the temperature in homes with remote heating was done by opening and closing the window because usually it was not possible to turn off the radiator. The houses were sufficiently ventilated (due to poor insulation), and carpets and wall-to-wall carpeting were not very common. Pets were rare as in most families both parents worked away from home. Furthermore, children spent a lot of time in public day-care facilities as early as their first year of life.

A different lifestyle developed in west Germany. Beginning in the 1960s the west Germans had more money to travel around and had contact with many influences including new allergens. As in other western

countries, the diversity of food increased and introduced a much broader spectrum of allergens. This also holds true for clothing and many household goods. Housing and energy, especially after the oil crisis of the 1970s, were expensive. Thus, insulation of the homes became widespread, and the air exchange rates decreased to one-third of the rate directly after the war. Furthermore, wall-to-wall carpeting became very popular even in children's rooms. Pets became popular as well, and today one finds only few families with children which have no pets. The number of women working outside of the home in west Germany was smaller than in east Germany. Furthermore, since the public day-care system for children was and is underdeveloped, young children typically lived at home with their mothers with perhaps one sibling and had only after the third year of life or so more intense contact with groups of other children.

The environmental situation also developed differently in both parts of Germany. Until the beginning of the 1970s, classical industrial air pollution with high amounts of sulfur dioxide, particulates, PAH and metals were seen in the industrialized areas, with different patterns depending on the area. Thereafter, in west Germany, classical pollutants were more and more decreased first due to dilution from high stacks — and later due to filtering techniques. Thus, the concentration of SO₂, particles, and PAH went down. On the other hand, automobile traffic increased dramatically, and since the catalytic converter was uncommon until the late 1980s, NO₂, benzene and other traffic-related pollutants increased. In contrast, in east Germany classic pollutants have remained an issue even to the present. SO₂ was especially high and increased even more after the oil crisis, caused by an even broader use of the sulfur-rich domestic brown. Because people had to wait for years until they could buy a car, automobile exhausts played a much smaller role than in the west.

In the last years a number of epidemiological studies has been performed comparing the prevalence of allergies and allergic reactions in different parts of east and west Germany (see references). Most of them show more asthma, wheezing, hay fever, bronchial hyperresponsiveness, positive skin-test and higher levels of specific IgE in

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children and adults in the west German areas (we ignore here the observation that total IgE is higher in the east, which is probably due to non-allergic reasons). This suggests that allergic diseases and allergic reactions are more prevalent in the west. Within west Germany we see small but reproducible differences suggesting that in places with real high traffic load, allergic reactions and asthma are more prevalent. However, these effects are restricted to situations where automobile exhausts are a severe problem. Within east Germany, in highly polluted places small and reproducible differences are also observed for allergies suggesting that classical pollutants or heavy metals play a relevant role. However, the differences between east and west Germany are larger.

It is possible to interpret these findings comprehensively (see Fig. 1). If we assume that exposure during the first years of life is most relevant for allergic sensitization for the rest of the life, the studies mentioned above suggest that relevant factors developed differently in the 60s. At the moment we can only speculate which are the most relevant factors and can thus only conclude, as have others that 'western lifestyle' may be responsible for this surprising difference. In the prevalence of allergies this difference seems to be more important than differences in environmental pollution within the west and within the east.

What can be expected to happen in the coming years? East German lifestyle, in all details, approaches the

western way of living. Thus, there seems to be clear evidence that also the rates of allergic sensitization in east Germany will catch up to those in west Germany within the near future. This could mean, that atopy, asthma, hay fever and other diseases which until now are less common in the east will increase there rapidly. Since even in west Germany the increasing trend is continuing, the increase could become even more dramatic in the eastern part of our country, an unexpected consequence of German reunification. The future will show whether this really happens.

Acknowledgement

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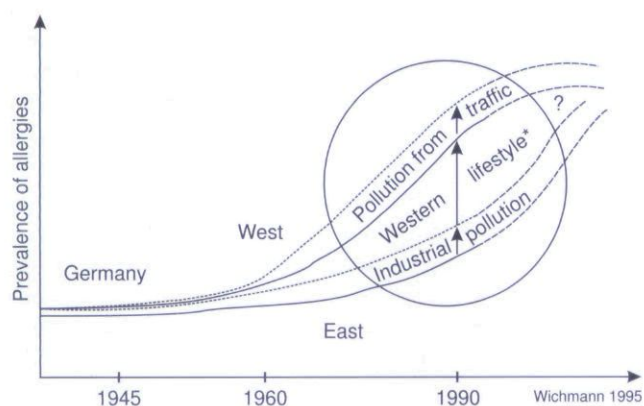


Fig. 1. Prevalence of allergies in east and west Germany by year of birth. Proposed hypothesis: the east–west difference is mainly due to different lifestyles. Additional influences are industrial pollutants, primarily in the east, and pollution from traffic, mainly in the west. As lifestyles in the East become more similar to those in the West, there may be a steep increase in allergies in the coming years. ---. Exposed to pollution from traffic (West) or industrial pollution (East) during early childhood. —. Controls. * Better insulation of houses, more pets, more carpeting, greater spectrum of allergens: food, travelling.

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