

Allergic rhinitis and asthma have generally good outcome and little effect on quality of life – a 20-year follow-up

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Allergic disease has generally favourable prognosis with advancing age, in terms of both symptoms (1) and skin-test positivity (2, 3). However, little is known about the long-term impact of allergy on quality of life (QoL). In order to find prognostic factors

for future morbidity and to evaluate the impact of allergic symptoms and test results at young age on future QoL, we followed up a cohort of young patients with allergic disease for 20 years.

All patients ($n = 104$) aged 15–24 referred to Kanta-Häme Central Hospital (Hämeenlinna, Finland) in 1989–1990 with symptoms of allergic rhinitis or bronchial asthma were recruited. Family and symptom history, smoking habits and medications were recorded. Total serum IgE antibody level, blood eosinophil count, histamine challenge test for bronchial responsiveness, peak expiratory flow measurement and skin-prick testing (SPT) with birch, alder, hay and mugwort pollens, dog and cat dander and house dust mite (*Dermatophagoides pteronyssinus*) were performed

(ALK-Abello, Horsholm, Denmark). Wheal diameter of ≥ 3 mm was considered a positive response in SPT. Diagnosis of bronchial asthma was based on positive histamine challenge test ($PD_{15}FEV_1 < 0.4$ mg) (4) with symptoms indicative of asthma, and diagnosis of allergic rhinitis on rhinitis symptoms with positive SPT to at least one allergen.

Twenty years later (February 2010), a detailed questionnaire about the present allergic symptoms and medications and a Finnish translation of RHINASTHMA QoL questionnaire were sent to 101 patients (three patients could not be traced). RHINASTHMA is a validated (5), one-page questionnaire designed to estimate the impact of rhinitis and asthma on QoL, and a validated Finnish translation (6) is available. It includes 30 items each scaled from 1 to 5, the total sum weighed into a scale of 0–100, higher score indicating heavier impact, i.e. poorer life quality. Seventy-six patients (75%) filled in the questionnaire and were included in the analysis.

The mean age at the initial visit was 18 (range 15–24) (Table 1). Men were more likely to be SPT positive than women (74% vs 48%, $P = 0.01$). Among clinical, demographical or health-behaviour baseline parameters analysed, SPT positivity to horse was associated with increased asthma-related hospitalization during follow-up ($P = 0.036$) and that to dog with a new diagnosis of asthma ($P = 0.059$). Smoking in 1989–1990 predicted symptomatic asthma in 2010 regardless of medication (27% of smokers symptomatic compared to 3% of nonsmokers, $P = 0.048$). However, baseline smoking or SPT positivity to horse or dog did not significantly affect QoL 20 years later.

After 20 years, subjective mean symptom score (scale 0–5) was unchanged

(1.9 vs 1.8 at baseline). Number of completely symptom-free patients increased fivefold from 2 (3%) to 11 (14%). Among the 76 respondents, mean QoL index (scale 0–100) was 18.8 (median 10.4, range 0–75). Internal consistency of the answers to the questionnaire answers was excellent (Cronbach's α -coefficient 0.969). Contrary to expectations, those with atopic constitution at young age, based on SPT (positivity, number of SPT reactions, sum of wheal diameters), had consistently better life quality in middle age. Mean QoL index was 17.4 among patients with positive prick test and 20.7 among those with negative (difference not significant). Among SPT-positive (atopic) patients, QoL index was 11.3 in patients with three or more SPT reactions compared to 22.2 in patients with 1–2 positive reactions ($P = 0.033$). The same trend was observed if the atopic burden was measured by the sum of SPT wheal diameters: the higher the sum, the better the QoL (differences not significant). Patients who were diagnosed with asthma in 1989–1990 experienced slightly worse life quality in 2010 (QoL 21.8 vs 16.5, difference not significant).

In conclusion, allergic burden at young age assessed by symptoms and SPT had no adverse impact on disease-specific life quality 20 years later. However, because of only one QoL measurement, long time period between baseline and follow-up measurements and univariate QoL analysis, no causal relationship between allergic burden at young age and QoL later can be alleged. There was no sign of increasing allergy symptoms over time. IgE-specific allergic rhinitis and bronchial asthma are generally benign disorders with favourable outcome.

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Table 1 Patient characteristics of 101 young patients (15–24 years) referred because of allergic symptoms in 1989–1990 and of the 76 respondents (75%) to a 20-year follow-up questionnaire in 2010

	Initial visit in 1989–1990 (n = 101)		Follow-up questionnaire in 2010 (n = 76)	
	Positive SPT* (n = 58, 57%)	Negative SPT (n = 43, 43%)	Positive baseline SPT* (n = 43, 57%)	Negative baseline SPT (n = 33, 43%)
Mean age (range), years	18 (15–24)	18 (15–24)	38 (34–45)	38 (34–45)
Gender				
Females (n = 63)	30 (48%)†	33 (52%)	23 (53%)	25 (76%)
Males (n = 38)	28 (74%)	10 (26%)	20 (47%)	8 (24%)
Referral diagnosis				
Allergic rhinitis	46 (79%)	29 (67%)	NA	NA
Bronchial asthma	21 (36%)	16 (37%)		
Allergy symptoms				
Seasonal	48 (83%)	14 (33%)	29 (67%)	15 (46%)
Nonseasonal	10 (17%)	29 (67%)	14 (33%)	16 (48%)
Initial diagnosis				
Allergic rhinitis	34 (59%)	–	NA	NA
Nonallergic rhinitis	–	25 (58%)		
Bronchial asthma	25 (43%)	16 (37%)		
Other‡	–	2 (5%)		
Mean subjective symptom score§ (0–5) (range)	2.1 (0–4)	1.7 (0–4)	1.9 (0–4)	1.8 (0–4)
Increased bronchial responsiveness (positive histamine provocation test)	32 (55%)	24 (56%)	Not studied	Not studied
Mean quality of life index¶ (median, range)	Not studied	Not studied	17.4 (10.8, 0–75)	20.7 (9.2, 0–72)

SPT, skin prick test; NA, not applicable.

*At least one positive skin-prick reaction with a wheal with minimum diameter of 3 mm. Most common positive allergens: hay (66%), birch (52%), cat (43%), dog (38%), dust mite (35%).

†Percentages calculated within sex, not within skin-prick reactivity.

‡No diagnosis 1, urticaria 1.

§Assessed by the patient. 0 = no symptoms. 5 = unbearable.

¶Rhinasthma score, scale 0–100 (see text).

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HT: data gathering, statistical analyses, writing of the manuscript, study design.

MR: original data gathering (baseline 1989–1990), study design. TH: original data gathering (baseline 1989–1990), study design, scientific advisor.

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