

Correspondence

Serum lead levels in childhood eczema

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Atopic dermatitis (AD) is a distressing disease associated with pruritus, sleep disturbance and impaired quality of life.¹ The incidence of eczema has been increasing in developed countries. Although pollution of air and food (e.g., with lead) has been considered as a possible culprit, these factors have never been investigated in Hong Kong. This study aimed to evaluate if clinical severity scores of AD were associated with abnormal serum lead levels. The clinical research ethics committee of the Chinese University of Hong Kong approved the study.

We prospectively measured the serum lead levels in consecutive new patients aged > 1 month and selected existing patients requiring blood samples to be taken at the paediatric dermatology clinic of a university teaching hospital over an 8-month period. AD was diagnosed according to the criteria of Hanifin and Rajka.² Correlations between these levels, serum IgE levels as a marker of atopy, eosinophil counts, AD severity [Scoring Atopic Dermatitis (SCORAD) and Nottingham Eczema Severity Score (NESS)]^{3–5} and quality of life [Childrens' Dermatology Life Quality Index; (CDLQI)]⁵ were also evaluated. NESS was used for children aged > 1 year and CDLQI on children aged ≥5 years. Dietary intake and use of traditional Chinese medicine were also evaluated. Lead levels were measured by inductively coupled plasma mass spectrometry (ICP-MS).

Pearson coefficients were used to analyse the correlations between clinical indices and heavy metal levels. $P < 0.05$ was considered significant.

Between July 2008 and February 2009, 58 patients with eczema were evaluated. Log-transformed IgE level (as a marker of atopy) was positively correlated with serum

lead. Lead levels were generally within normal limits but their levels were positively correlated with poor quality of life (CDLQI: $r = 0.41$ and $P = 0.003$), disease severity (objective SCORAD: $r = 0.46$ and $P < 0.001$; NESS: 0.35, $P < 0.01$) and log-transformed IgE ($r = 0.34$ and $P < 0.05$) (Table 1). Lead levels, objective SCORAD and NESS were higher in patients whose parents reported that they had 'ever consumed' traditional Chinese medicine (Table 2).

Environmental and dietary factors have been incriminated in AD. Several types of heavy metals have been studied but the results have been inconclusive.⁶ Lead poisoning in children is a serious problem worldwide. Although none of the children in this study was found to have lead levels beyond local upper limits in our series, the levels significantly correlated with disease severity and poor quality of life. The source of the lead intake in our series is uncertain. Old buildings with lead wall paints are rare in Hong Kong and are unlikely to have contributed to lead intake in local children. Most food products are imported

Table 2 Comparison of clinical parameters and laboratory tests between patients who reported ever using traditional Chinese medicine (TCM) and those who had never used TCM for eczema.

	Use of TCM		<i>P</i>
	Ever (<i>n</i> = 30)	Never (<i>n</i> = 28)	
SCORAD	46.3 ± 21.6	33.1 ± 18.2	0.02
Objective SCORAD	34.9 ± 18.5	24.5 ± 15.8	0.03
NESS	12.4 ± 2.4	10.9 ± 2.6	0.02
Lead	0.10 ± 0.04	0.08 ± 0.03	0.03

CDLQI, Childrens' Dermatology Life Quality Index; NESS, Nottingham Eczema Severity Score; SCORAD, SCORing Atopic Dermatitis. Results are mean ± SD.

Table 1 Correlation between clinical parameters and laboratory tests in our patients.

	Objective SCORAD	NESS	CDLQI	Age	Log-transformed IgE
Log-transformed IgE	0.58 (< 0.001)	0.41 (< 0.05)	0.21 (0.132)	0.31 (0.02)	–
Eosinophil percentage	0.65 (< 0.001)	0.41 (< 0.05)	0.44 (0.001)	0.09 (0.51)	0.57 (< 0.001)
Lead	0.46 (< 0.001)	0.35 (< 0.05)	0.41 (< 0.05)	0.05 (0.75)	0.34 (< 0.05)

CDLQI, Childrens' Dermatology Life Quality Index; NESS, Nottingham Eczema Severity Score; SCORAD, SCORing Atopic Dermatitis. Results are expressed as Pearson correlation coefficients (*P* values). Significant *P* values are in bold.

from the Chinese mainland or overseas. In a previous study, we found that many parents give their children traditional Chinese medicine drinks.⁷ Many Chinese proprietary medicines have been found to be adulterated with heavy metals. Further studies are needed to explore the issue of inadvertent consumption of lead in Hong Kong children.

Our results give important directions to future studies. Chelation therapy for lead has aroused much controversy in Hong Kong. The treatment is empirical, expensive and is offered by a few local physicians. To date, there is no evidence that chelation therapy works for children with eczema with low levels of heavy metals. Clearly, more research on serum lead level and eczema is desired. At present, alternative and unproven therapies should be avoided.

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