Atopic Dermatitis: Increased Prevalence and the Influence of Birth, Siblings and Maternal Factors

Sir,

A recent hypothesis proposed that atopic dermatitis (AD) may result from a faulty selection of T-lymphocytes in the thymus with "dysmatured" T-cells leaving the thymus and continuing growth in the skin, where they eventually are eradicated by the patient's immune system. The aberrant T-cells are suggested to be responsible for a cytokine imbalance and the development of type I allergies (1). Recent epidemiological data from several European countries may indirectly support this hypothesis: an increasing prevalence of AD in most countries around the world (2), the older age of first-time mothers, a positive relation between the increased prevalence of AD and increased parity, increased gestational age and AD (3, 4) and the sibling effect (5, 6).

The purpose of the present study was to investigate the historical prevalence of AD at the National Institute of Pediatrics (NIP) of Mexico City since 1971. In addition, we studied a cohort of 200 children with AD and 200 healthy children under the following parameters: parental age, gestational age, birthweight, distribution of children in the family, and severity of AD.

MATERIAL AND METHODS

From 1971 to 1998 all charts of paediatric patients aged from birth to 17 years, and with a clinical diagnosis of AD were reviewed. The diagnosis of AD was made by the same experienced paediatric dermatologists, and was based on criteria similar to those used by Hanifin & Rajka (7). In total, 200 mothers of children with AD from the outpatient clinic at the NIP, and 200 mothers of healthy children without a personal or family history of atopy from the clinic for healthy children were interviewed. The following data were recorded: sex, age, socioeconomic status, dwelling place, birthweight of the index child, maternal and paternal ages at the time the child was born, number and birth order of siblings, and written consent to participate in the study. Gestational age was based on the date of the last menses. Prenatal care was provided in all cases by a gynaecologist–obstetrician. Mature newborns were those of 37–40 weeks' gestation, preterm those of < 37 weeks' gestation, and post-term those of > 40 weeks' gestation.

The severity of AD was rated at the moment of the interview according to the extension of cutaneous involvement based on the rule of nines (8), as follows: mild, < 30% involvement; moderate, 30–50% involvement; and severe, > 50% involvement.

The sample size of 200 children in each group was calculated to be sufficient for statistical analysis.

RESULTS

The prevalence of AD among 10,000 patients consulting for the first time at our Department was 12.9% from 1971 to 1981. Between 1982 and 1998 the prevalence was 16.9% among 32,460 first-time patients ($p < 0.03$).

There were no significant differences between the 200 non-atopic, healthy children and the 200 children with AD on any of the parameters studied.

Among children with AD 53 (26.5%) were single children and 147 (73.5%) had siblings. In the latter group 40 (20% of total AD cases) were the first-born child in the family. Thus, of the patients with siblings, significantly more children with AD were second-born compared with first-born ($p < 0.05$).

The patients with AD had a total of 437 siblings. The mean number of siblings per family was 2.2. Among the siblings of the 200 patients with AD, 32 (16%) had AD. In the group of 18 patients with severe AD, 28% had siblings with AD.

AD was mild in 93 (46.5%), moderate in 89 (44.5%) and severe in 18 (9%). The findings in the 3 groups were, respectively, mean paternal age 28.1, 29 and 25 years; mean maternal age 28.9, 26 and 29 years; gestationally mature 2%, 0% and 0%; premature 5%, 8% and 0%; first-born 46%, 49% and 44%; second-born 39%, 26% and 33%; third-born 12%, 13% and 11%; fourth-born 2%, 10% and 11%; and fifth-born 1.8%, 0% and 0%.

DISCUSSION

At the NIP in Mexico City a 4% increase of AD has taken place since the mid-1980s. The same diagnostic criteria were used by the same paediatric dermatologists. However, it cannot be excluded that a change in referral pattern contributed to this increase.

The sample, comprising a cohort of 200 non-atopic children and 200 children with AD, was large enough to detect any significant differences. The general characteristics of both groups were similar. All children were of middle to low socioeconomic status, living in urban or suburban areas of Mexico City. Among the patients with AD, 26.5% were single children and 20% were first-born among their siblings. These 2 groups accounted for 46.5% of all cases of AD; therefore, taken together, the highest proportion of AD was observed in first-born children. If only patients with siblings were taken into consideration, second-born children had the highest proportion of AD. This is in accordance with the "old mother" hypothesis and against the sibling effect. The inverse association between the number of older siblings and the risk of atopy has been explained by the fact that the risk of early infections increases with sibship size. In children with older siblings infections may stimulate the development of Th1-lymphocytes and inhibit the proliferation of Th2-lymphocytes (5, 6). In a recent report it was found that having older siblings within a family is negatively associated with a history of paternal atopy (6). In our patients the family history of atopy was only investigated in siblings.

Prematurity has proven not to be related to AD (9). Postmaturity, however, has been found to have a significant correlation with the risk of developing AD (10). In the present study there were more postmature cases in the control group ($n = 6$) than in the AD group ($n = 2$). There were also more preterm cases in the control group ($n = 16$) than in the AD group ($n = 12$). It has been suggested that higher birthweight is a "dysmaturation" manifestation in patients with AD (4). In our study the control group had even slightly higher birthweights than the AD group. In relation to the severity of AD there were no significant differences between mild, moderate and severe cases in relation to the total number of cases.

In conclusion, the immune dysmaturation hypothesis, which is in part supported by the "old mother" hypothesis, cannot fully explain the increased prevalence of AD in our group of patients, but cannot be excluded as a factor in AD.

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Molluscum Contagiosum on a Tattoo

Sir,
Molluscum contagiosum following tattooing practice is a very rare event. Here we report the second case, to our knowledge.

CASE REPORT

A 20-year-old Caucasian woman was admitted to our Institute because of the appearance of several papular lesions localized exclusively on the left forearm. The lesions had appeared in the context of a tattoo which had been created 3 weeks earlier. The patient stated that she was in good general health and that she was not on any therapy.

Dermatological examination revealed the presence of 10 papules which were localized exclusively within the tattoo: they were round, 2–4 mm in diameter, of different colours (from pearly to bluish), shiny and of a parenchymatous–hard consistency (Fig. 1). All papules were asymptomatic. No similar lesions were found on other areas of the skin surface or mucous membranes.

A general physical examination did not reveal anything pathological. All laboratory examinations, including tests for human immunodeficiency virus (HIV) infection, were within the normal range or negative. Histopathological examination, obtained from a shaving of a lesion, confirmed the clinical diagnosis of molluscum contagiosum (Fig. 2).

The patient refused all treatments that we suggested.

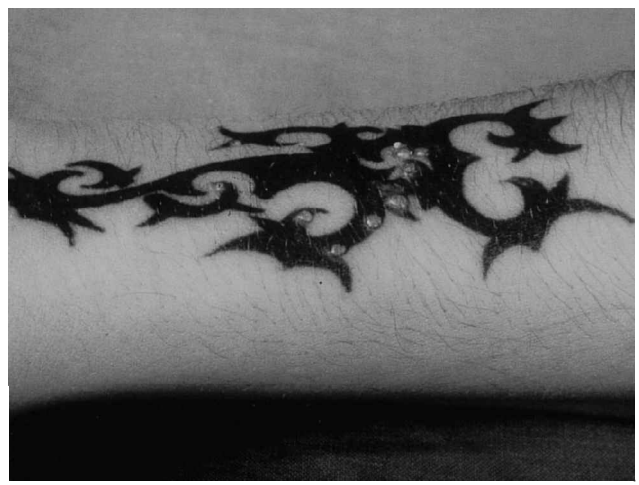

Fig. 1. Papules limited to within the area of the tattoo.

DISCUSSION

The practice of tattooing can transmit, albeit rarely, some severe systemic infectious diseases, such as hepatitis B and C (1–14), acquired immunodeficiency syndrome (AIDS) (15), tetanus (1, 10) and septicaemia (1). Several infectious diseases of the skin can also be transmitted, in particular warts (1, 6, 14, 16–18), but also rubella (10), vaccinia (1), impetigo (1, 10), erysipelas (1, 10), ecthyma (1, 10), cellulitis (1, 10), gangrene (1), chancroid (1, 10), syphilis (1, 6, 10, 14), cutaneous tuberculosis (1, 6, 10, 14, 18) and leprosy (1, 10, 14, 19–21). To our knowledge, only one previous case of molluscum contagiosum following tattooing has been reported (22).

It is very likely that the appearance of molluscum contagiosum is related to tattooing, since all lesions appeared following tattooing and exclusively within the area covered by the tattoo. At least two pathogenetic hypotheses may be advanced: (i) viruses may have been transmitted by the instruments used for tattooing; this is the most likely hypothesis; or (ii) the ink may has been contaminated by viruses. Furthermore, some authors (17) have suggested that black dye can decrease locally either cell-mediated or humoral immunity. It seems highly unlikely that the patient had