The Frequency of Common Skin Conditions in Preschool-aged Children in Australia

Seborrheic Dermatitis and Pityriasis Capitis (Cradle Cap)

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Objective: To determine the prevalence and severity of seborrheic dermatitis and pityriasis capitis in Australian preschool-aged children.

Design: A stratified cross-sectional skin survey using cluster sampling of centers throughout Victoria, Australia.

Setting: The study population included children attending child care centers, preschools, and Maternal and Child Health Centers, with the reference population being Australian children 5 years and younger.

Participants: Of the 1634 children in the original sample, 1116 children aged 11 days to 5 years 11 months were included in the study.

Intervention: Parents completed a questionnaire recording demographic information and personal and family history of skin problems and related diseases. A dermatologist performed a total skin examination, including the diaper area for children younger than 12 months.

Main Outcome Measure: The age- and sex-specific prevalence rates and site and severity of seborrheic dermatitis and pityriasis capitis were measured.

Results: The overall age- and sex-adjusted prevalence of seborrheic dermatitis was 10.0% (95% confidence interval [CI], 8.2%-11.7%): 10.4% (95% CI, 7.8%-12.9%) in boys and 9.5% (95% CI, 7.0%-12.0%) in girls. This was highest in the first 3 months of life, decreasing rapidly by the age of 1 year, after which it slowly decreased over the next 4 years. Most (71.9%) had disease classified as minimal to mild. Pityriasis capitis occurred in 41.7% (95% CI, 38.8%-44.6%) of the 1116 children examined, with 85.8% categorized as minimal to mild only.

Conclusions: Seborrheic dermatitis and pityriasis capitis are common in early childhood. Most children have minimal to mild disease that would require little if any treatment. Education programs directed at those caring for preschool-aged children are needed to provide information on simple preventative measures and treatment, if necessary, that could easily reduce the morbidity associated with these very common conditions.

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Seborrheic dermatitis and pityriasis capitis (cradle cap) are said to be common in infancy and decrease in frequency with increasing age. Nevertheless, there is some debate about the true nature or even existence of these conditions.1,2 Hence, their frequency in population-based studies is rarely reported. In one study from the United States, a prevalence of 9.6 per 1000 persons aged 1 to 5 years was reported.3 In pediatric clinics its relative frequency has varied from 2.2% to 4.0% of all problems seen or 4.5% of problems seen in children younger than 6 years.4,5

The major textbooks of dermatology state that seborrheic dermatitis may be common, but they frequently assert that the true prevalence is unknown.2,6 There are no published data on the frequency of pityriasis capitis, but it has been suggested that it may be a variant of seborrheic dermatitis.5

All studies on the frequency of cutaneous conditions are dependent on reliable diagnostic criteria. In the case of seborrheic dermatitis and pityriasis capitis, there are no widely accepted clinical or other diagnostic criteria that are sufficiently sensitive or specific to the conditions to be confident that what is being described is uniquely seborrheic dermatitis or pityriasis capitis.7

When diagnostic criteria are determined from patients seen in dermatology or pediatric clinics, they may be describing only patients in whom the disease is biased toward the moderate to severe end of the spectrum. Features of the very mild...
forms of disease that may be seen in population-based studies, but not requiring medical attention, may not be included in the process leading to diagnostic criteria. Hence, there may be an underreporting of the true frequency of cutaneous conditions based on diagnostic criteria that are derived from specialist clinics.

The present study aimed to determine the prevalence and severity of seborrheic dermatitis and pityriasis capitis in a population-based, stratified cross-section of preschool-aged children examined throughout Victoria, Australia. It also documented the presence of other common skin conditions seen in preschool-aged children including atopic dermatitis, diaper (napkin) dermatitis, and a variety of birthmarks. This report is the second in a series of reports on the prevalence of the conditions found.

METHODS

A cross-sectional skin survey using a randomly selected cluster sample of child care centers, preschools, and Maternal and Child Health Centers in both urban and rural communities in Victoria was undertaken from June 26, 1998, to January 28, 1999. The reference population was Australian children 5 years and younger. A detailed methodology has been published previously. Parents completed a self-administered questionnaire recording general demographic information on the child and present or past personal and family history of skin problems or related diseases. If the child had any skin condition, information was recorded regarding treatment and the source of treatment recommendations. Seborrheic dermatitis and pityriasis capitis were identified in specific or closed questions within the questionnaire.

Each child was given a total body examination, with the underpants (diaper) area being examined only in children younger than 12 months or at the request of the parent in an older child. The sites were assessed in the same sequence for all children.

All data gathered were entered into a database using Filemaker Pro version 4.0 software package for Windows (Claris Corporation, Santa Clara, Calif). They were analyzed using the Statistical Package for Social Sciences version 8.0 for Windows (SPSS Inc, Chicago, Ill). Age- and sex-specific prevalence rates with 95% confidence intervals (CIs) were calculated for seborrheic dermatitis and pityriasis capitis. The presence of either of these conditions reported by the parent or guardian was compared with diagnosis made by the examiner, thus enabling various indexes of validity to be calculated for the parental questionnaire. Prevalence estimates were based on data weighted according to the age and sex of all preschool-age children in Victoria.

A diagnostic definition was compiled from what has been described in standard textbooks of dermatology and any surveys that have been reported. A diagnosis of seborrheic dermatitis was made if there was erythema with overlying “greasy scale” in the typical sites of face, trunk, and flexures (usually in association with scalp involvement) and where the diagnosis of atopic dermatitis was considered unlikely, based on the clinical diagnostic criteria previously reported for atopic dermatitis.

Severity of seborrheic dermatitis was divided into minimal (<1% of surface area involvement and unlikely to be noted by those caring for the child and requiring little or no intervention), mild (<5% surface area involvement and likely to respond to simple measures, such as emollients), moderate (<30% of surface area involvement and likely to require medical intervention including the use of mild topical corticosteroids), and severe (>30% surface area involvement, for which management by a dermatologist and/or hospital admission would be considered).

A diagnosis of pityriasis capitis was made if there was scaling in the scalp alone in the absence of extrascalp inflammatory skin disease consistent with seborrheic dermatitis. The severity was divided into minimal (fine, powdery white scale, unlikely to be noted by caregivers and requiring little or no intervention), mild (slightly larger flakes loosely adherent to the scalp or hair shafts and likely to respond to simple measures including emollients or gentle manual removal), moderate (thick flakes or scale, yellowish, and associated with underlying erythema, which would respond to mild topical corticosteroids or other measures prescribed by a medical practitioner), and severe (very thick scale, closely adherent to the scalp and hair, involving most of the scalp, associated with erythema, and requiring management by a dermatologist).

RESULTS

POPULATION SAMPLE

Of the original 68 randomly selected centers, 49 participated in the study. Of the 1634 children in the original sample, 1116 (68.3%) were examined, 1091 of whom also had correctly completed parental questionnaires. A comparison of the responses in the questionnaire of children who were examined with responses in the 139 completed questionnaires in which the child was not examined revealed no obvious difference between the groups in terms of age, sex, and frequency of seborrheic dermatitis reported. There were 567 boys (50.8%) and 549 girls (49.2%), with a mean age of 3 years (range, 11 days to 5 years 11 months).

OBSERVER RELIABILITY

Assessment of surveyor drift as a measure of observer reliability showed no significant change in the prevalence of seborrheic dermatitis or pityriasis capitis in the children seen in the first 15 centers compared with the prevalence in the children seen in the last 15 centers ($\chi^2=0.79$, $P=.37$).

PREVALENCE OF SEBORRHEIC DERMATITIS AND PITYRIASIS CAPITIS

Seborrheic dermatitis was recorded in 114 of the 1116 children examined (crude point prevalence, 10.2% [95% CI, 8.4%-12.0%]). The age- and sex-adjusted prevalence was 10.0% (95% CI, 8.2%-11.7%). The remainder of the results are adjusted rates. There was a small, but not significant, difference in prevalence between boys (10.4% [95% CI, 7.8%-12.9%]) and girls (9.5% [95% CI, 7.0%-12.0%]). There was a clear age-specific prevalence for the disease, occurring in 44.5% (95% CI, 37.1%-52.0%) of those younger than 12 months, with the highest prevalence in children younger than 3 months (Table 1). There was a substantially decreasing prevalence after the age of 1 year.
There was no consistent trend in frequency by season. Although children whose mothers were born in Asia (5.0% [95% CI, 0.6%-9.3%]) had a lower prevalence than those whose mothers were born in Australia and New Zealand (11.5% [95% CI, 9.6%-13.7%]), the difference was not statistically significant (odds ratio [Australia and New Zealand vs Asia], 2.5 [95% CI, 0.99-6.31]).

Of the 1116 children, 465 (41.7% [95% CI, 38.8%-44.6%]) had pityriasis capitis. There was no difference in prevalence between boys and girls, with a male-female ratio of 0.89 (95% CI, 0.70-1.2). It was most common in children between the ages of 1 and 2 years (Table 1). There was no consistent trend by season. There was a significantly lower prevalence of pityriasis capitis in children whose mothers were born in Asia (19.8%) compared with those whose mothers were born in Australia and New Zealand (43.3%; odds ratio [Australia and New Zealand vs Asia], 3.09 [95% CI, 1.86-5.14]).

### SEVERITY OF SEBORRHEIC DERMATITIS AND PITYRIASIS CAPITIS

Most children diagnosed on examination with seborrheic dermatitis and pityriasis capitis had disease that was classified as minimal or mild. For seborrheic dermatitis cases, only 27.2% were classified as moderate and 0.9% as severe (Table 2). A breakdown of site by severity shows that the scalp and face were the sites most commonly affected and that as severity increased, there were an increasing number of sites affected (Table 3).

For pityriasis capitis cases, 85.8% were classified as minimal to mild. The remainder were classified as moderate, with no child having severe disease. There was a decreasing prevalence of moderate disease and an increasing prevalence of minimal to mild disease with increasing age (Table 4).

### PARENTAL REPORT OF THE PRESENCE OF SEBORRHEIC DERMATITIS AND PITYRIASIS CAPITIS

An analysis of the parental questionnaire revealed a relatively low awareness of the presence of seborrheic dermatitis. Although there was a specificity of 82.8% for the parents reporting an absence of seborrheic dermatitis, the sensitivity was low (43.0%), as was the positive predictive value (22.6%). The condition was more likely to be reported by the parents of children having moderate to severe disease than those having minimal to mild disease. There was relatively low awareness by the parents of pityriasis capitis, despite a question specifically seeking the presence of “cradle cap,” a phrase commonly used by the lay community (Table 5).

### TREATMENT OF SEBORRHEIC DERMATITIS AND PITYRIASIS CAPITIS

On the questionnaire, 194 parents (34.3%) had correctly reported that their child had either seborrheic dermatitis or cradle cap and provided information on treatment. A total of 114 products were used by 102 parents (52.8%) to treat their children’s condition. The products were coded according to whether they were available by prescription only, available over the counter without prescription, or general products (products that patients would not normally be advised to use or products prescribed by alternative or allied health practitioners). Medical practitioners provided products by prescription in only 4.4%, with 31.0% obtained over the counter as a medical product and the remaining 64.6% classified as general products. The products used were classified as efficacious or not. Of the products, 111 (99.1%) were classified as efficacious and 3 (2.7%) were classified as likely to be efficacious or not. Of the products, 111 could be identified clearly from the questionnaire and 94 (84.7%) were classified as efficacious.

In the available information on who parents had sought advice about seborrheic dermatitis, nurses were the major providers (35.0%). Family and friends (12.5%), general practitioners (10.0%), and pharmacists (15.0%) were the other common sources of advice. Similar sources of advice and frequencies were recorded for pityriasis capitis.

### COMMENT

This study demonstrates that seborrheic dermatitis and pityriasis capitis are very common in young children, sup-
porting and quantifying impressions stated in commonly used textbooks of dermatology. The major problem with these conditions is diagnostic definition. In this study, we have been liberal and therefore inclusive rather than exclusive in recording the presence of scaling, which has led to the very high frequency of pityriasis capitis. A prevalence of around 50% in children up to the age of 3 years suggests that the condition might be considered normal for the community. A large proportion of children with these changes were classified as having minimal to mild conditions and were not reported by their parents to have any abnormality. Thus, it is unlikely that these children would have been taken to a medical practitioner and diagnosed as having pityriasis capitis. If only those who had moderate or severe disease (ie, those who would benefit from advice from a medical practitioner) were included, the overall prevalence for pityriasis capitis would become 14.2%, with the highest prevalence in those younger than 1 year (29.2%) and decreasing in frequency with increasing age. These figures are probably more consistent with what has been diagnosed as pityriasis capitis in medical textbooks.

The same comments apply to the frequency of seborrheic dermatitis. A prevalence of 71.7% in children younger than 3 months could be argued to be almost a normal or physiological change. It is likely that only the 30.3% of cases classified as moderate or severe disease would be incorporated into a classification of seborrheic dermatitis based on those who require treatment by a medical practitioner. Generally, it is medical prac-
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REFERENCES


A course on humanitarian assistance for dermatologists, intended to prepare dermatologists for participation in humanitarian assistance projects under austere circumstances, will be offered in Bethesda, Md, from June 2 through June 6, 2003. The primary audience is federal dermatologists and residents, but the course is open to civilian dermatologists and residents with interest or experience in humanitarian assistance. The course is ideal for people who might volunteer to work with organizations that provide medical or humanitarian assistance to victims of disaster relief. The course is offered under the auspices of the Department of Dermatology, Uniformed Services University of the Health Sciences, and the Center for Disaster and Humanitarian Assistance Medicine. Up to 30 hours of AAD/AMA Level I CME will be awarded. The course has a limited enrollment. For more information, contact the course director, Scott A. Norton, MD, MPH, Dermatology Service, Walter Reed Army Medical Center, Washington, DC 20307; phone: (202) 782-9484; fax: (202) 782-9118 (e-mail: scott.norton@na.amedd.army.mil).