

Pattern of Pediatric Dermatoses in a Referral Center in South India

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This study was undertaken to determine the pattern of dermatoses in children in south India. All children <14 years presenting to us between May 2001 and June 2002 were recruited. A total of 2100 children (males -995; females- 1105) with 2144 dermatoses were recorded. Infections and infestations were the most common dermatoses (54.5%) followed by dermatitis and eczema (8.6%), pigmentary disorders (5.7%), insect bite reaction (5.27%), hair and nail disorders (5.2%), miliaria (4.1%), nutritional deficiency disorders (2.8%), urticaria (2.5%), genetic disorders (2.1%), psoriasis (1.4%), collagen vascular disorders (0.5%), hemangiomas (0.5%), drug eruptions (0.3%), pityriasis rosea (0.2%) and others (5.8%). Pyodermas were the most common dermatoses (47.13%) followed by scabies (30.6%) amongst infections and infestations. Atopic dermatitis was noticed only in 3 patients. Insect bite reactions (papular urticaria) (5.27%) and miliaria (4.1%) were attributed to the tropical weather conditions in this coastal area. Genetic disorders including ichthyosis and palmoplantar keratoderma contributed to 2.1% of cases and could be due to the high incidence of consanguinous marriages in this society.

Key words: Children, Dermatoses, South India.

Dermatological problems constitute at least 30% of all outpatient visits to a pediatrician and 30% of all visits to a dermatologist involve children(1,2). The prevalence of skin diseases amongst children in various parts of India has ranged from 8.7% to 35% in school-based surveys(3). Schools from rural areas showed relatively higher prevalence of skin diseases. All the children in a school survey of high altitude tribal area of Himachal Pradesh, in India were found to have one or more types of skin disease(4). We undertook this study to determine the pattern of common dermatoses in children presenting to a tertiary care center in South India.

Subjects and Methods

This study was conducted in Dermatology and STD Department of our Institute, a referral center in coastal south India. The

climate of this region is typical of a tropical area with high temperature and humidity.

All children, 14 years and below, attending the dermatology out-patient department with any dermatoses between the period of May 2001 and June 2002 were enrolled in the study. The diagnosis was made by a dermatologist based on detailed history, clinical features and appropriate investigations such as KOH examination, Tzanck test, Gram's stained smear, hematological and biochemical investigations, skiagrams, VDRL test, skin biopsy *etc.* The diseases were tabulated based on the etiology and results were analyzed.

Results

During the study period of 1 year, 10,400 new cases attended our Out-patient Department. A total of 2,100 children with

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2,144 dermatoses were seen during this period, thus comprising 20.2% of total new cases. Among these children, 44 had more than one dermatosis. There were 995 male and 1105 female children in the study with male to female ratio of 0.9 : 1. The age and sex distribution is given in *Table I*.

The various dermatoses encountered are shown in *Table II*. The infestations and infections were the most common group of disorders (54.4% -1169 cases). The pattern of various infections and infestations is provided in *Table III*. Pyoderma and scabies were the most common bacterial and parasitic infections, respectively.

The other disorders included in the 'Other' category were lichen nitidus (12), lichen striatus (12), keratosis pilaris (12), folliculitis decalvans (7), lichen planus pigmentosus (7), epidermal nevus (4), granuloma annulare (3), pityriasis rubra pilaris (3), acquired melanocytic nevus (3), erythema toxicum neonatorum (3), histiocytosis(3), anhidrotic ectodermal dysplasia (3), polymorphous light eruption (3), lichen planus (2), nevus depigmentosus (2), cutaneous mastocytosis (2), congenital melanocytic nevus (2), dermatitis herpetiformis (2), callosities (2), xeroderma pigmentosum (2), lipoid proteinosis (2), Bloom's syndrome (2), fissure feet (2), Wiskott-Aldrich syndrome (2), hypomelanosis of Ito (2), lichen sclerosus et atrophicus (2), pyogenic granuloma (1),

TABLE I—Age and Sex Distribution of Children.

Age	Male	Female	Total
0- 1 yr	211(10.04%)	223(10.6%)	434(20.6%)
1- 4 yrs	412(19.6%)	400(19.0%)	812(38.6%)
5- 9 yrs	272(12.9%)	332(15.8%)	604(28.7%)
10-14 yrs	100(4.7%)	150(7.1%)	250(11.9%)
Total	995(47.4%)	1105(52.6%)	2100

TABLE II—Distribution of Etiology of Various Dermatoses in Children.

Dermatoses	No. of cases (%)
Infections and infestations	1169 (54.5%)
Dermatitis and eczema	184 (8.6%)
Pigmentary disorders	123 (5.7%)
Insect bite reaction	113 (5.27%)
Disorders of hair and nails	112 (5.2%)
Miliaria	88 (4.1%)
Nutritional deficiency disorders	61 (2.8%)
Urticaria	54 (2.5%)
Genetic disorders	46 (2.1%)
Psoriasis	31 (1.4%)
Collagen vascular disorders	12 (0.5%)
Hemangiomas	11 (0.5%)
Drug eruptions	7 (0.3%)
Pityriasis rosea	5 (0.2%)
Others	125 (5.8%)
Total	2144 (100%)

aphthous ulcers (1), lymphangitis (1), periocular melanosis (1), phenylketonuria (1), tuberous sclerosis (1), erythrokeratoderma (1), implantation dermoid (1), palmoplantar hyperhidrosis (1), geographic tongue (1), Darier's disease (1), congenital syphilis (1), Sturge-Weber syndrome (1), actinic prurigo (1), nevus of Ota (1), Mongolian spot (1), erythema multiforme (1), lipodystrophy (1), neonatal acne (1), incontinentia pigmenti (1), cutis marmorata (1), neurofibromatosis (1), and nevus sebaceous (1).

Discussion

The pattern of skin diseases in children is very much influenced by climate, external environment, dietary habits and socio economic status(5). The present study brings into focus the pattern of pediatric dermatoses encountered in a referral center in south India.

The most common dermatoses

TABLE III—*Pattern of Infections and Infestations.*

Dermatoses	No. of cases (n)
<i>Pyoderma</i>	551
Secondary pyoderma	384 (17.9%)
Impetigo contagiosa	124 (5.8%)
Bullous impetigo	40(1.9%)
Blistering dactylitis	3(0.14%)
<i>Infestations</i>	358
Scabies	304 (14.2%)
Pediculosis	52 (2.4%)
Cutaneous larva migrans	2 (0.09%)
<i>Fungal infections</i>	181
Tinea corporis	66 (3.1%)
Tinea versicolor	68 (3.2%)
Candidiasis	45 (2.1%)
Subcutaneous phycomycosis	2 (0.09%)
<i>Viral infections</i>	96
Molluscum contagiosum	54 (2.5%)
Warts	17 (0.8%)
Herpes simplex infections	10 (0.4%)
Varicella zoster virus infection	8 (0.37%)
Exanthems	7 (0.3%)

encountered were infections and infestations, which were seen in 54.5% of the study population. Negi *et al.*(6) in their study found that infections and infestations contributed to 50% of their cases in Garhwal region of Uttar Pradesh. Various other authors have reported them occurring in the range of 35.6% to 85.2% (6-9). In all these studies, whether institution based or community based, the infections and infestations were the main group of dermatoses. The higher frequency of infections and infestations in our study could possibly be due to large rural population attending our hospital belonging to low socio-economic strata. Roughly, 80% of our cases originated from south Arcot district of Tamil Nadu state, in south India, a predominantly rural area.

Further, these dermatoses may also represent the inadequacies in the primary health care facilities and poor socioeconomic status.

Pyoderma was the most common infection in our study and comprised 47.13% of infections and infestations. In a study conducted in rural Pakistan, pyoderma was the most common disorder in the children(10). In most other studies, pyodermas are the single most common dermatoses(6-10). The presence or absence of biting flies is important in determining the amount of pyoderma, for the irritation and subsequent infection of insect bites appeared to underlie the largest number of cases.

The incidence of scabies has varied from 5.1 % to 22.4% in various studies(6-10). Two school surveys done at Himachal Pradesh and Pondicherry in India had found pediculosis capitis to be the most common dermatological disorder in children(4,11). The decreased frequency of pediculosis capitis in our study could be due to increasing awareness about hair care and hygiene among females.

Incidence of eczemas (8.6%) was low, when compared with western studies where they ranged from 18% to 34%(12-14). Another interesting observation is the rarity of atopic dermatitis in our study population. We had only 3 cases of atopic dermatitis, which accounted for 0.01% of the total children. In contrast, studies from developed countries report a higher incidence ranging from 3.1% to 28% (15). This low frequency of atopy may be related to the dietary habits and climate.

Genetic disorders such as ichthyosis and palmoplantar keratoderma were frequently encountered in our study in contrast to studies by Ghosh *et al.*(9) and Porter *et al.*(10) who did not encounter any of these disorders. The higher occurrence of these keratinization disorders in our population can be explained

Key Message

The frequency of dermatoses such as infections and infestations, nutritional disorders and environment-associated disorders (insect bite reaction and miliaria) is high in south India.

by the fact that our institute is a referral center. Moreover, the incidence of consanguinous marriage is very high among rural population of our region, which helps in propagation of many genetic disorders in families.

Insect bite reaction (papular urticaria) contributed to 5.27% of the study population. Ghosh *et al.*(9) observed a lower frequency of 4% in their study. Such high frequency of papular urticarias can be explained by the fact that most of these children are from rural or semi urban areas and wear scanty clothing due to climatic conditions and thus being exposed to insect bites. Miliaria is another disorder peculiar to hot and humid tropics, and was seen in 4.1% of the children.

Our study brings into light the unique features of tropical pediatric dermatology such as high frequency of dermatoses like infections and infestations, nutritional disorders and environment associated disorders (insect bite reaction and miliaria). The occurrence of rare genetic and other dermatoses is noticeable as our institute is a referral center and in this society, consanguineous unions are more a way of life. We would like to highlight the fact that many of these dermatoses can be controlled by proper sanitation, improving nutrition and environment.

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Cost of Syrup Versus Capsule Form of Vitamin A Supplementation

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The study was done to estimate the cost of each dose of vitamin A (2,00,000 Units) to the health system when delivered as a capsule, applicap or as syrup form. The cost of distribution of vitamin A supplements was estimated for the manufacturers, district and delivery level. The lowest cost per dose was for capsules in plastic jar (Rs. 0.99) and the highest was for the syrup in glass bottle (Rs. 1.29), the option currently being practiced. The distribution costs were least for the capsule, which compensates for its higher production cost. The cost of syrup was also more due to high degree of wastage compared to capsules. While cost is an important issue, other operational factors need also to be considered.

Key words: *Cost, Supplement, Vitamin A.*

Globally, approximately 21% of all children suffer from vitamin A deficiency, with the highest prevalence being in South-East Asia(1). A survey in nine states of India in 1999-2000 showed the average intake of vitamin A in children between 1 to 3 years of age to be 106 µg against the recommended dietary allowance of 400 µg. It varied between 71 µg in Andhra Pradesh to 171 µg in West Bengal(2).

In India, currently under the Reproductive

and Child Health (RCH) program, vitamin A supplementation is being carried out to children from six months to three years in the syrup form. The first dose of 1 ml (1 ml = 100,000 units) is given along with measles vaccine at nine months of age and subsequently six monthly doses of 2 ml are given till three years of age. However, despite many years of the program the coverage rates are low. As per the second National Family Health Survey (NFHS-2) in 1998-99, in the