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Profile of Alopecia Areata in Children at Prof. Dr. I.G.N.G. Ngoerah General Hospital, Bali, 2021-2023

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ABSTRACT

Background: The prevalence of alopecia areata in childhood is increasing yearly. Alopecia areata is often seen in daily practice among our patients, studies related to this disease are still limited and must be updated. This study aims to describe the clinical characteristics of pediatric patients diagnosed with alopecia areata at Prof. Dr. I.G.N.G. Ngoerah General Hospital Denpasar from 2021 to 2023. **Purpose:** This study is expected to be used for decision-making related to the management of alopecia areata in children. **Method:** This study is a quantitative descriptive study. The data used is secondary data from medical records with a cross-sectional design. The sample includes pediatric patients diagnosed with alopecia areata at Prof. Dr. I.G.N.G. Ngoerah General Hospital Denpasar from January 2021 to November 2023. **Results:** This study involved 18 patients with an average age of 10.33 ± 4.85 years. In 2021, there were 5 patients; in 2022, there were 6 patients; and in 2023, there were 7 patients. The genders of girls and boys were the same, with 9 patients for each. Hair loss is the most common clinical symptom, with a percentage of 100%. The highest onset occurs between 1–6 months at 44.44%. The most common dermoscopic findings is a black dot, which accounts for 38.89%. **Conclusion:** Alopecia in childhood is different from alopecia in adults. The clinical picture in children can vary, and sometimes with nail involvement. Children with alopecia areata need further evaluation for other comorbidities.

Keywords: alopecia areata, non-scarring alopecia, pediatric alopecia, hair loss.

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BACKGROUND

The immune system mediates alopecia areata (AA), a chronic autoimmune condition that attacks hair follicles. Currently, there is an increasing trend in the prevalence of alopecia areata in childhood and adolescence. One study shows that the prevalence of alopecia areata in pediatrics reaches 0.11%. Between 2009 and 2020, there were 13.6 cases per 100,000 people per year (95% CI, 13.1–14.2). The prevalence distribution for both sexes resembles a bell-shaped curve, peaking at age 12 for boys and age 9 for girls.[1,2]

Overall, data in Indonesia is currently not available with certainty. However, based on a recent study at Dr Soetomo Regional General Hospital in Surabaya, the number of new patients with alopecia areata during 2012–2016 reached 0.6% of the total 4,875 patients. A total of 70% of new patients with alopecia areata are male overall, with a predominance in the 25-44 years age group at 40%. The most common complaint is local hair loss or baldness, which occurred in 27 patients (90%). The majority of new patients with alopecia areata had the disease for 0–6 months (reaching 20%), and 76.7% of them had no previous treatment history. The most common diagnostic criterion was the presence of small areas of hairlessness, found in 90% of patients. The most commonly encountered subtype of alopecia areata is the classic subtype, which accounts for 90% of the total number of patients.[3] Although we often see alopecia areata in our patients, studies about AA related still limit and must be updated. This study aims to explain the clinical characteristics of alopecia areata in children at Prof. Dr I.G.N.G Ngoerah General Hospital Denpasar Bali from 2021–2023.

METHODS

This study is a quantitative descriptive study. The data used is secondary data from medical records with

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a cross-sectional design. Researchers carried out sampling from the population of research subjects until they met the minimum number of required samples. The sample was pediatric patients diagnosed with alopecia areata at Prof. Dr I.G.N.G Ngoerah General Hospital Denpasar from January 2021 to November 2023. The outputs obtained include gender, age, type of alopecia, dermoscopic description, onset time, comorbidities, and therapy. We performed a univariate test in which we displayed numerical data as mean and standard deviation if they had a normal distribution; otherwise, we displayed them in the median and interquartile range. Nominal data were displayed descriptively in the form of frequency and percentage. The Ethics Committee at Prof. Dr. I.G.N.G. Ngoerah General Hospital has reviewed this research Number 0635/UN14.2.2.VII.14/LT/2024.

RESULT

This study involved 18 patients with an average age of 10.33 ± 4.85 years. In 2021, there were five patients; in 2022, there were six patients; and in 2023, there were seven. The genders of girls and boys were the same, with nine patients for each. Alopecia areata is the most common type of alopecia (83.33%). Hair loss is the most common clinical symptom (100%), followed by itching (44.44%), nail deformity (5.56%), and dandruff (5.56%). The most common onset is 1–6 months (44.44%). Systemic lupus erythematosus is the most common comorbid disease. The most common dermoscopic findings are black dots (38.89%), followed by yellow dots (27.78%), broken hair and exclamation marks (22.22%), vellus hair (11.11%), and pigtail hair (5.56%). The most commonly used therapies were topical corticosteroids and minoxidil (61.11%), followed by systemic corticosteroids (16.67%), antifungals (11.11%), and immunosuppressants (5.56%).

Table 1. Patient characteristics

Variable	Frequency	Percentage (%)
Type		
Alopecia areata	15	83.33
Alopecia universalis	2	11.11
Alopecia totalis	0	0
Ophiasis	1	5.56
Clinical Symptoms		
Hair losss	18	100
Itchy	8	44.44
Dandruff	1	5.56
Nail changes	1	5.56
Onset		
≤1 month	3	16.67
>1-6 months	8	44.44
>6-12 months	3	16.67
>12-18 months	0	0
>18-24 months	1	5.56
>24 months	3	16.67
Comorbid disease		
Systemic lupus erythematosus	3	16.67
Dermoscopic findings		
Yellow dot	5	27.78
Black dot	7	38.89
Velus hair	2	11.11
Broken hair	4	22.22
Exclamation mark	4	22.22
Pigtail hair	1	5.56
Hair growing upwards	0	0
Hair with pointed ends	0	0
Therapy		
Topical corticosteroids	11	61.11
Systemic corticosteroids	3	16.67
Immunosuppressant	1	5.56
Minoxidil	11	61.11
Antifungal	2	11.11

DISCUSSION

The causes of hair loss in children vary, and it is a challenge for dermatologists and pediatricians to diagnose and treat it to prevent further hair loss accurately. We can classify the etiology of childhood alopecia into congenital and acquired types. The immune system mediates alopecia areata (AA), a chronic disease characterized by an acute onset of hair

loss without scarring, ranging from small circular areas on the scalp to total hair loss across the head and body.[4]

Alopecia areata affects both sexes equally and can occur in all age groups and ethnic backgrounds.[5] This is in line with this study, in which the percentage of boys and girls is the same. However, one study shows that women are more likely to experience alopecia areata. The cause is still unclear. Some proposed mechanisms include (1) differences in androgen and estrogen receptor activation in immune cells between men and women, especially during pregnancy; (2) X-chromosome mediation of innate immune responses and immune tolerance; and (3) maternal microchimerism of fetal immune cell lines. It is not yet clear how the multifactorial etiology that causes a tendency towards the development of autoimmune diseases in women interacts with the multifactorial etiology of alopecia areata.[6]

The incidence of alopecia areata in children usually peaks at the age of 10.[7] This is in line with this study, in which the average age of patients who came for treatment was 10.33 years, with the youngest patient was 2 years old and the oldest patient was 17 years old. The WHO criteria for children is less than 19 years old as we also limited the age of patients involved in this study to less than 19 years. Alopecia areata causes non-permanent hair loss because hair regeneration depends on preserving hair follicle stem cells.[7] This is in line with the main complaint of patients, which is hair loss. Nail involvement was reported in 2–44% of patients with alopecia areata, occurring more frequently in children (>40%) than in adults (<20%).[8] In this study, one patient was found to have nail involvement.

Alopecia areata is also associated with various comorbidities, including atopic diseases, metabolic syndrome, *Helicobacter pylori* infection, systemic lupus erythematosus, iron deficiency anemia, thyroid disease, psychiatric disorders, and vitamin D deficiency.[9] Alopecia is one of the dermatological manifestations of systemic lupus erythematosus in children.[10] This study identified three children with systemic lupus erythematosus, highlighting the need to evaluate further systemic lupus erythematosus involvement in pediatric patients with alopecia areata. In addition, genetic factors also play a role in the development of this disease. The involvement of four key genes that significantly increased (CD8A, PRF1, XCL1) or decreased (BMP2) in tissue, especially in the AT and AU subtypes, has been reported.[11,12] However, this study did not include an in-depth genetic examination. One study showed that children with alopecia areata have an increased family history of autoimmune diseases, such as Hashimoto's thyroiditis. In children with first episodes and a short duration of AA (<6 months), thyroid examination may not be necessary if there is a positive family history of thyroid disorders.[12] However, thyroid examination should be routinely performed in all children with long-lasting alopecia areata. While the prevalence of adult AA is associated with several autoimmune conditions such as thyroid disease (8-28%), vitiligo (4%) and systemic lupus erythematosus (0.6%). [9,12]

The most common dermatoscopic findings in alopecia areata in children are yellow dots, black dots, broken hairs, exclamation marks, and vellus hairs. In contrast, other rare findings include perpendicular hairs, tapered hairs, pigtails, and Pohl-Pinkus constrictions.[13] Short vellus hair were seen in 68.4% of adult AA cases.[14] This study found that these characteristic signs help in the diagnosis. According to the treatment guidelines, the first line of treatment for patients less than 12 years of age is the administration of topical corticosteroids.[4] This is in line with this study in which most patients were given topical corticosteroids as the primary treatment. The recurrence rate of alopecia areata is high regardless of therapy, and with corticosteroids it varies between 33% and 75%.[15] Minoxidil is used as an adjunct to stimulate hair follicle proliferation.[16] Squaric acid dibutylester and diphencyclopropenone are immunotherapeutic agents used as second-line treatments for alopecia areata.[17] Common side effects include urticaria, dermatitis, blistering, and depigmentation.[18] Response rates vary between 9% and 87%, but one study showed that 20%–30% of patients achieved a sufficient response to avoid the need for a wig.[18] Other therapies involve ultraviolet A radiation or excimer lasers and systemic immunomodulators.[19] Interleukin-2 (IL-2) is used to stimulate Treg proliferation, but it can have a paradoxical effect by increasing NK cell proliferation and worsening alopecia areata.[19,20] Although AA can be spontaneous remission, follow-up is required to evaluate the progress of the disease, and response to treatment.

It is important to understand that childhood alopecia areata differs from alopecia in adults, both in terms of dermoscopic findings, underlying comorbidities and clinical symptoms are often accompanied by nail involvement. Therefore, dermatologists must consider several differences when dealing with childhood alopecia. The clinical picture in children can vary. Alopecia areata can result in significant psychosocial morbidity and depression. The demographic profile of hair loss varies depending on

the epidemiology in that location. Hair is an important complement to the skin, adding to a person's aesthetic appeal. In addition, hair loss in children is of particular concern as it can significantly affect their mental and physical development. The lack of studies focused on children makes this research important to support further research.

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