



## A CASE OF SEGMENTAL VITILIGO IN 7 YEARS OLD PATIENT TREATED BY NARROWBAND UV B COMBINED TOPICAL STEROID

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**Submitted:27-03-2024, Reviewer: 04-05-2024, Accepted: 13-05-2024**

### ABSTRACT

*Vitiligo is chronic disorder of pigmentation characterized by the development of white macules on the skin due to progressive loss of epidermal melanocytes, it may present anytime in life, including childhood, 25% of the patients usually occurred before the age of 8 years with a higher rate of segmental vitiligo. Phototherapy using narrowband ultraviolet B (nb UVB) combined topical steroids is considered among the treatments of choice for childhood vitiligo. Vitiligo has a profound impact on the quality of life of children. They often experience stigmatization, isolation, and low self-esteem. We reported a case of 7 yearold boy with segmental vitiligo. He complained asymptomatic milky white patches on one dermatome which is face, right inner arm, right hand, right abdomen and right back, expanded within 6 months. There was no history of itchy red patches on the white patches before. There were hypopigmented macules and chalky-white accentuation of the lesions under wood lamp examination. The patient was treated with nb UVB plans for 30 times in the 1<sup>st</sup> session and mometason furoat cream 0,1. After 3<sup>rd</sup> week phototherapy there were improvement along with the decrease of CDLQI from 10 to 7.*

**Keywords:** *segmental vitiligo, childhood, narrowband UV B.*

### ABSTRAK

Vitiligo adalah kelainan pigmentasi kronis yang ditandai dengan makula berwarna putih susu pada kulit akibat hilangnya melanosit epidermal yang progresif, dapat terjadi kapan saja dalam hidup, termasuk masa kanak-kanak, 25% dari pasien biasanya terjadi sebelum usia 8 tahun dengan tipe yang paling sering adalah vitiligo segmental. Fototerapi menggunakan narrowband ultraviolet B (nb UVB) dikombinasikan dengan steroid topikal dianggap sebagai salah satu pengobatan pilihan pada vitiligo anak. Vitiligo memiliki dampak besar pada kualitas hidup anak-anak. Mereka sering mengalami stigmatisasi, isolasi, dan rendah diri. Kami laporkan kasus anak laki-laki berusia 7 tahun dengan vitiligo segmental. Pasien mengeluh bercak berwarna putih susu pada wajah, lengan kanan bagian dalam, tangan kanan, perut kanan dan punggung kanan yang tidak gatal dan tidak mati rasa, semakin meluas sejak 6 bulan yang lalu. Tidak ada riwayat bercak merah gatal pada bercak putih sebelumnya. Pada status dermatologis terdapat makula hipopigmentasi. Pada pemeriksaan wood lamp tampak warna yang lebih terang pada bercak putih susu dibandingkan kulit normal. Pasien diterapi dengan nb UVB, direncanakan sebanyak 30 kali dalam sesi



pertama dan krim mometason furoat 0,1%. Setelah fototerapi 3 kali tampak perbaikan bersamaan dengan penurunan DLQI dari 10 menjadi 7.

**Kata kunci:** vitiligo segmental, anak, narrowband UV B

## INTRODUCTION

Vitiligo is an acquired chronic disorder of pigmentation characterized by the development of white macules on the skin due to progressive loss of epidermal melanocytes. The pathogenesis is not yet well understood. The most accepted pathogenesis theory of vitiligo is genetic and nongenetic factors interact to melanocyte, ultimately causing autoimmune damage to melanocytes (Ezzedine & Harris, 2019). Vitiligo scientifically proven can impact the quality of life of children and adults. Patients with vitiligo often experience stigmatization, isolation, and low self-esteem (Picardo et al., 2022).

Vitiligo may present anytime in life, including the neonatal period and childhood. Vitiligo approximately 0.5% to 2% of the worldwide population, without predilection in terms of sex or ethnicity (Abdel-Megaid et al., 2021). The onset before the age of 12 years in 32–40% of patients are proven in several studies. Two studies from India and one from China reported onset of vitiligo before the age of 4 years in 17% of children, between 4 and 8 years of age in 42–49% of children, and between 9 and 12 years of age in 35–40% of children with vitiligo studied. Studies have also shown that the psychosocial impact of the disorder in children is not to be underestimated. Childhood vitiligo can be associated with significant psychological trauma that may have lasting effects on the person's self-esteem (Nicolaidou et al., 2019).

The appearance of acquired milk-white macules with fairly homogeneous depigmentation and well-defined is the

principal clinical manifestation of vitiligo (Ezzedine & Harris, 2019). Childhood vitiligo has been categorized as “segmental” and “non-segmental” types, based on the epidemiological studies. Segmental vitiligo (SV) implies occurrence of depigmented macules and patches along dermatomal or quasi-dermatomal pattern, without crossing the midline. In non-segmental vitiligo (NSV), the skin lesions may be generalized (vitiligo vulgaris, universal vitiligo) or localized (focal, mucosal, acrofacial, acral) (Nicolaidou et al., 2019).

Various therapeutic modalities are available for the treatment of vitiligo, such as medical therapy (topical and systemic), phototherapy, surgery, camouflage with cosmetics and total depigmentation. Medical therapy is considered as the first line of management in this age group. The combination of topical therapy and phototherapy is said to be safe and effective for repigmentation of the skin thus improving the quality of life. Several data showing narrowband ultraviolet B (nbUVB) phototherapy effective and its safety profile in children with vitiligo, Narrow band UVB has proven to be efficacious in many of skin condition including vitiligo. Although much data of nbUVB exists in adults, there is a paucity of its reports in children. (Ezzedine & Harris, 2019)(Nicolaidou et al., 2019)

## CASE REPORT

A 7 years old boy patient came with asymptomatic milky white colored patches on his face, inner right arm, right hand, right abdomen and right back that have expanded considerably since 6 months ago. Initially, there were milky white patches as big as corn kernels on right abdomen since 4 years



ago and became larger over the past two years. Patients went to a dermatologist and received an ointment once a day and was advised to sunbathe in the morning sunshine for 15 minutes. Patients take medication and sunbathe regularly for more than 6 months but there was no improvement. There was no history of reddish patches on the same area previously.

On medical examination we found well defined macula hypopigmentation on one dermatome which is on his face, right inner arm, right hand, right abdomen and right back, ranging in size (picture 1). Woods lamp examination revealed chalky-white accentuation of the lesions Vitiligo Area Scoring Index (VASI) was 6 which mean minimally worse. Children Dermatology Life Quality Index was 10 which mean moderate effect in his life.



**Picture 1. Hypopigmented macules on right face, right chest, right back right arm, and right hand**

The irradiation is done in the interval two times a week. There was slight

improvement within 3<sup>rd</sup> week therapy (picture 2). We also explain to the parent that patient illness needs treatment in the long term. Combination therapy is given the first 3 months



**Picture 2. Repigmentation occurred (blue circle) on the face and hand after 3<sup>rd</sup> week combination therapy of NB-UVB and topical corticosteroid.**

## DISCUSSION

We reported a case of segmental vitiligo in children. This diagnosis was made by anamnesis, physical examination and wood lamp examination. Vitiligo is defined as an acquired cutaneous hypopigmentation characterized by asymptomatic, various sizes and shape of milky white cutaneous macules. Vitiligo usually presents in childhood or young adults, with a mean age of onset varying between 4 and 5 years. Around 25% of them develop before 8 year. Approximately half to one third of them develop this condition by 20 years of age (Pereira et al., 2019). It spares no age, sex, or race. In Chinese study, 24.1% of the vitiligo patients were in the pediatric age group. 16% of Korean with vitiligo were children. In two Indian studies, the prevalence has been reported to be 26% (south India) and 23.3% (north India). Onset of the disease is usually below 10 years of age. The Mean age at onset of childhood



vitiligo in an Indian study was 6.2 years, similar with Korean and Chinese studies, 5.6 years and 7.28 years. Higher incidence in females, being more common in segmental vitiligo and less frequent association with other systemic autoimmune and endocrine disorders differs childhood vitiligo and adult. There is a statistically significant difference in the incidence of vitiligo in boys and girls based on Indian study but few other studies have not recorded such a difference (Nicolaidou et al., 2019) (Farajzadeh et al., 2023). In this case, this patient was 7 years old boy, with the first onset when he was 3 years old with chief complaint milky white patches felt no itchy and no numbness that have expanded considerably since 6 months ago on his inner right arm, right hand, right abdomen and right back.

Vitiligo characterized by well-demarcated, milky-white macules and patches, asymptomatic, may be localized or generalized. Childhood vitiligo has been categorized as segmental and non-segmental types. Segmental vitiligo (SV) means the depigmented macules and patches along dermatomal or quasi-dermatomal pattern, without crossing the midline (Ezzedine & Harris, 2019). Approximately 5-16% of all vitiligo cases are segmental vitiligo and has a relatively equal gender distribution. Segmental vitiligo usually involves only one body area and displays a sharp demarcation around the midline of the body. Its predominance happens around 4-10 first years of life and can develop at all ages (Speckaert et al., 2020). In this patient we found the milky white patches only occur on one dermatome so we diagnosed with segmental vitiligo.

It is difficult to distinguish vitiligo in children from other hypopigmentation disorders such as, pityriasis alba and postinflammatory hypopigmentation.

Pityriasis alba commonly affects children and is considered a component of the spectrum of atopic dermatitis, characterized by hypopigmented, mildly scaling patches common on sun-exposed areas. The disease begins with erythema plaque, has an elevated border and desquamation occurs within a few weeks. Such patches usually clear with or without treatment with low-potency corticosteroids. While post-inflammatory hypopigmentation is preceded by inflammation. Patients have a history of localized inflammation in the hypopigmented area. These skin disorders may experience resolution spontaneously (Ezzedine & Harris, 2019) (Abdel-Megaid et al., 2021). In this case we can eliminate this differential diagnosis because there was no history of reddish patches on the same place or history of red patches that are itchy on the white patches previously.

Diagnosis of vitiligo is based on clinical appearance and physical examination. Invasive and sophisticated investigations are not required, but Wood's lamp examination may be needed to confirm the diagnosis. It may be difficult to differentiate a lesion of vitiligo from the surrounding normal skin in fair skin children. In these cases, examination under Wood's lamp is helpful. Complete blood count and fasting blood sugar should be performed as a routine work-up for all patients. In case of diagnostic difficulty, skin biopsy may be taken. (Ezzedine & Harris, 2019) We had confirmed the patient's patches by a Wood's lamp examination. We plan to do complete blood test, blood sugar count and thyroid function test to find out the vitiligo associated with any other autoimmune disorder.

Various therapeutic modalities are available for the treatment of vitiligo; unfortunately not all of these can be used in children. The modalities of therapy in





childhood vitiligo consist of medical therapy (topical and systemic therapy), phototherapy, surgical therapy, cosmetic camouflage and depigmentation. High-potency steroids are more effective in vitiligo, but it is not recommended for use in children. First-line therapy for children with localized vitiligo is mid potent topical corticosteroids. The efficacy of topical corticosteroids as monotherapy for the treatment of vitiligo is supported by a few small randomized trials. A systematic review of 17 randomized trials examined the effect of topical corticosteroids in combination with other therapies (eg, narrowband ultraviolet B/ nb UVB. ) The combination of potent or super-potent topical corticosteroids (eg, betamethasone dipropionate, mometasone furoate, clobetasol propionate) with light therapies is more effective than light therapies alone in inducing repigmentation. (Abdel-Megaid et al., 2021; Ezzedine & Harris, 2019; Nicolaidou et al., 2019) We plan to do the nb UVB phototherapy for 30 times in 1<sup>st</sup> session . The irradiation is done in the interval two times a week. After the 3<sup>rd</sup> week of nb UVB and mometasone furoate application, there were an improvement on patient skin lesions. On his face, the milky white patches turn to brownish patches. But there were poor progression on the trunk, back, inner arm and hand.

NB-UVB offers a potential for the management of childhood vitiligo. In children, the maximum period recommended is 12 months. Further therapies are needed if there is no response at 6 months of treatment, in view of the greater susceptibility of vitiliginous skin to sunburn and photodamage owing to lack of melanin (Abdel-Megaid et al., 2021). A retrospective study by Mayers et al conducted phototherapy NB-UVB to 126 patients and the result indicating that NB-

UVB is well-tolerated and effective in pediatric vitiligo management (Garza-Mayers et al., 2023). Clinical efficacy analysis by Liu et al showed the best repigmentation effect can be achieved by combination therapy of NB-UVB and topical corticosteroid for 12 months in 110 cases of childhood vitiligo (Liu et al., 2022).

Standardized measurement instruments of good quality can objectify disease severity and the efficacy of therapies. In patient care, this allows evaluation of disease severity or treatment. The Vitiligo Area Scoring Index (VASI) is one of outcome measures that assess the degree of depigmentation; these scores were proposed to offer accurate measures of disease severity and treatment evaluation (Eleftheriadou et al., 2022). Quality of life can be measured by Dermatology Life Quality Index (DLQI), which focuses on certain conditions and diseases, especially skin diseases chronic. For pediatric patients, use Children's Dermatology Life Quality Index (CDLQI) (Ekasari & Pardina, 2021). A study of 58 patients in Thailand showed improvement in VASI score after NB-UVB therapy (Silpa-Archa et al., 2019). VASI and CDLQI of patient in this case are getting lower after combination therapy of steroid topical and NB-UVB, from moderate effect to small effect.

Over all, cosmetic concern is the most important aspect in childhood vitiligo, it arouses in the psyche of patients and their family members because of the stigma associated with it, negatively affects multiple aspects of quality of life in childhood. Counseling are require in all children with vitiligo, as they may be the victims of peer-teasing, bullying, and avoidance at schools. This may lead to anxiety, introvert personality and childhood depression. Routine follow-up should be performed regarding the child's perception





about the illness and difficulties in interaction with other children. Weber et al demonstrated higher Children's Dermatology Life Quality Index (CDLQI) scores for chronic skin disease. Other authors have suggested that vitiligo correlates with childhood depression, especially in the preteen years, and that disease in teenagers, especially in visible areas, may affect emotional development (Ekasari & Pardina, 2021).

This situation happened in this patient, he often felt ashamed with the lesion on his body, sometimes he got bullying from his friends, so it is difficult to him to interact with his friends. But after there were an improvement due to his lesion on face, he started to feel confident and his parent admit they see the patient get easier to interact with his friends, along with the decreased of DLQI.

## CONCLUSION

Narrowband UV B phototherapy combined mometason furoat 0,1% cream give good result in segmental vitiligo in children. These results certainly require several session and patient compliance plays important role in the success of therapy.

Vitiligo negatively affects multiple aspects of quality of life in childhood, the patient tends to get bullying and avoidance at schools. It should be discussed in detail during routine follow-up, which highlight to screening for emotional and functional impairment (using DLQI) in the clinical assessment in childhood vitiligo and refer it to children psychiatrist as necessary.

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