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Clinico-Epidemiological Profile of Vitiligo Patients Receiving Narrowband Ultraviolet-B (NB-UVB) Treatment

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ABSTRACT

Background: Vitiligo is an idiopathic disease with a prevalence of 0.5-2% worldwide that causes the loss of melanocyte cells from parts of the body and is characterized by the appearance of well-defined white macules. The pathogenesis of vitiligo is suspected to originate from genetic, non-genetic, and autoimmune factors. Currently, Narrowband Ultraviolet-B (NB-UVB) is the first-line phototherapy treatment to treat vitiligo. **Purpose:** To evaluate the profile of vitiligo patients who were given phototherapy at the Dermatology and Venereology Outpatient Clinic, Dr. Soetomo General Academic Hospital for the period January-December 2019. **Methods:** This study used a retrospective descriptive research design with descriptive statistical methods. In this study, the medical records were evaluated by recording the patient's age, gender, occupation, history of illness, family history, and results of a physical examination. **Result:** This study obtained 31 samples that received phototherapy dominated by the age range of 17-25 years (29%) and male gender (55%), with a ratio of 1:0.82 to women. The majority work as others (68%). The most common trigger factor was emotional stress (29%). According to physical examination, the majority of patients had multiple lesions (81%), were not widely available (58%), and were of the generalized type (52%). **Conclusion:** It can be evaluated from the most data obtained: 17-25 years old (29%), male gender (55%), other occupations (68%), emotional stress triggers (29%), multiple lesions (81%), unavailable lesion area (58%), and generalized type (52%), describe the profile of vitiligo patients in Dr. Seotomo General Academic Hospital in 2019.

Keywords: vitiligo, phototherapy, Narrowband Ultraviolet-B (NB-UVB), clinico-epidemiologic profile.

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BACKGROUND

Vitiligo is an idiopathic disease characterized by the appearance of well-defined white macules caused by the progressive loss of melanocytes from the skin, hair, eyes, and other parts of the body that contain melanocytes.[1] This disease has no regard for race, gender, or skin color. Women, on the other hand, were found to be checking themselves into health facilities more frequently than men, owing to female patients experiencing greater Quality of Life (QOL) disturbances than men. The etiopathogenesis of vitiligo is still unclear. However, the suspected pathogenesis of this disease includes genetic, non-genetic, and autoimmune responses.[2]

According to several population studies, this disease has an estimated prevalence 0.5%-2% worldwide.[3] In Indonesia, the number of vitiligo patients who visit each hospital varies. The prevalence of vitiligo at the Dermatology and Venereology Outpatient Clinic Dr. Soetomo Surabaya was around 0.35% in 2009-2011, and this figure increased to 0.5% in 2014. According to the medical records of vitiligo patients at Dr. M. Djamil Padang's Dermatology and Venereology Outpatient Clinic, there were 117 vitiligo

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patients between 2010 and 2013, with a total incidence of 0.45% of total visits. At Dr. Hospital Hasan Sadikin Bandung, from February 2012 to April 2014, there were 242 vitiligo patients who visited.[4]

The onset of vitiligo causes several disruptions in patients' QOL. Vitiligo patients have lower self-esteem and are more sensitive to other people's opinions of them. Therapy that must be done on a regular basis causes some patients to lose their jobs, suffer from severe depression, and even consider suicide.[5]

Phototherapy is one of the treatments available to treat cases of vitiligo. NB-UVB can cause 40%-100% repigmentation, depending on the location of the lesion.[1] Repigmentation was still seen in 80% of patients even after a year of stopping therapy.[6] Because of its lower cumulative dose and fewer side effects, NB-UVB is also considered safer than other types of phototherapy.[7]

To improve understanding of and awareness of vitiligo, a deeper understanding of the disease is required. The purpose of this study is to determine the general profile of vitiligo patients who received phototherapy at the Dermatology and Venereology Outpatient Clinic, RSUD Dr. Soetomo General Academic Hospital from January to December 2019.

METHODS

This study uses medical records and descriptive analysis to identify the clinical profiles of vitiligo in patients receiving NB-UVB radiation. This study's population consisted of vitiligo patients at Dr. Soetomo General Academic Hospital in 2019. The sample used was all patients who met the inclusion criteria, which were all patients who received NB-UVB therapy. Patients with incomplete medical record data were excluded. The age, gender, occupation, precipitating factors, number, size, and distribution of the lesions are the study's variables. Precipitating factors were defined as potential causes of vitiligo.

Narratives and tables are used to present descriptive data. To describe the data, descriptive statistical components such as percentages are used. This research has been assessed by the Hospital Ethics Committee of Dr. Soetomo General Academic Hospital Surabaya No. 0682/LOE/301.4.2/XI/2021.

RESULT

Out of the 51 patients diagnosed with vitiligo, only 31were given NB-UVB therapy and had complete medical records, so they met the inclusion criteria of this study.

Table 1. Demographic data of the vitiligo patients

Variable	n (%)
Gender	
Female	14 (45%)
Male	17 (55%)
Age (years)	
0-5	4 (13%)
5-11	4 (13%)
12-16	0 (0%)
17-25	9 (29%)
26-35	1 (3%)
36-45	3 (10%)
46-55	6 (19%)
56-65	3 (10%)
>65	1 (3%)
Occupation	
Housewife	4 (13%)
Civil servant	2 (6%)
Private employees	4 (13%)
Entrepreneur	0 (0%)
Others	21 (68%)

Table 2. Precipitating factors in vitiligo patients

Variable	n (%)
Family history	
Yes	4 (13%)
No	27 (87%)
Emotional stress	
Yes	9 (29%)
No	22 (71%)
Physical trauma	
Yes	6 (19%)
No	25 (81%)
Neurologic disease	
Yes	0 (0%)
No	31 (100%)
Systemic disease	
Yes	2 (6%)
No	29 (94%)
Autoimmune disease	
Yes	3 (10%)
No	28 (90%)

Table 3. Physical examination data of the vitiligo patients

Variable	n (%)
Number of lesions	
Single	6 (19%)
Multiple	25 (81%)
Area of lesions (cm^2)	
≤ 10	5 (16%)
11-20	5 (16%)
21-30	3 (10%)
>30	0 (0%)
Not available	18 (58%)
Distribution of lesions	
Focal	10 (32%)
Segmental	5 (16%)
Generalized	16 (52%)
Universalis	0 (0%)

Table 1 shows that the majority of newly diagnosed vitiligo patients were between the ages of 17 and 25 (29%). The age classification is based on data from Indonesian Ministry of Health in 2009. Vitiligo was more common in men (55%) than in women (45%). In terms of occupation, the majority of patients (68%) were listed as "others," followed by housewives and private employees (13%).

According to the data in Table 2, there were several medical histories related to the occurrence of vitiligo. Emotional stress was the most common risk factor, affecting as many as 9 people (29%), followed by physical trauma in 6 patients (19%). There was no history of neurological disease in any of the patients.

The number of lesions in vitiligo patients was classified as either single or multiple. Table 3 shows that 25 (81%) of the 31 vitiligo patients had multiple lesions. The lesion area was dominated by lesions measuring 10 cm and 11-20 cm (16%). With a total of 16 patients (52%), generalized vitiligo was the most common type of lesion affecting patients. Another type of lesion that frequently affects patients is the focal type, which affects 32% of the population. The type of lesion with the least prevalence of 0 patients is vitiligo universalis.

DISCUSSION

According to Table. 1, 29% of vitiligo patients who received NB-UVB therapy were between the ages

of 17 and 25, with 9 patients falling into this category. Fauzia's research in 2017 at the Medical Cosmetics Division of the Dermatology and Venereology Outpatient Clinic at Dr. Soetomo General Hospital revealed that the age groups with the newest vitiligo patients were 20-44 years and 45-59 years, with 12 (32.4%) patients each.[8] These finding back up the researchers' findings that the majority of vitiligo patients were young adults. These study results are consistent with the findings of Suseno, who conducted research at Cipto Mangunkusumo General Hospital in Jakarta between 2015 and 2017. It was discovered that 18.8% of the 225 patients studied had vitiligo between the ages of 21 and 30, making them the majority of the other age groups.[9]

Vitiligo can begin at any age. However, these lesions usually appear before a person's third decade of life. Almost half of patients develop white macules on their bodies before the age of 20, and one-third before the age of 12.[1]

The ratio of male to female patients was 1:0.82, with 17 (55%) patients being male. This study's findings are consistent with previous research by Fahaad, who found that men accounted for 57.4% of vitiligo cases in Najran, Saudi Arabia.[10] In 2017, researchers at Dr. Soetomo General Hospital Surabaya discovered 19 (51.4%) female patients.[8] In a study conducted at Dr. Cipto Mangunkusumo General Hospital in Jakarta, it was discovered that more female patients (55.3%) visited the doctor about their lesions than male patients.[9]

Although both men and women appear to be affected equally by vitiligo, there are significant gender differences in the patterns of mental and social impairments. Gender differences are especially prevalent in women, contributing to higher levels of depression, anxiety, and social isolation.[11]

The majority of patients' occupations were listed as "other" (68%). Housewives (13%), and private employees (13%), are the next most common occupations. The majority of patients work indoors and are rarely exposed to direct sunlight.[12]

Working with chemicals is one of the risk factors for the development of vitiligo. A leather factory worker whose hands came into contact with gloves complained of depigmentation, which was determined to be monobenzyl ether after patch testing. This depigmentation is caused by an exacerbation of autoimmune damage rather than direct toxicity to melanocytes.[1]

Previous studies have not detected a significant correlation between quality of life and disease progression or the presence of patches on sun-exposed skin.[13] However, vitiligo patients frequently experience financial decline as a result of reduced working hours to attend phototherapy at the hospital, which limits the patient's career options and causes missed important school days in pediatric patients.[11] Thus, it can be concluded that vitiligo can affect a person's productivity. Furthermore, patients with vitiligo frequently experience a variety of psychological issues, including depression, anxiety, and shame, which can lead to low self-esteem and social isolation.[14] This psychosocial stress, as well as these psychiatric comorbidities, should be considered in the treatment of vitiligo, as stress may act as a precipitating factor.[15]

The etiopathogenesis of vitiligo is thought to include genetic, non-genetic, and autoimmune responses.[2] It should be noted that a patient can have more than one disease association. According to a study conducted at Dr. Soetomo General Hospital in 2017, 16.28% of the 62 patients studied had vitiligo caused by non-genetic factors, with emotional stress being the second most common trigger factor.[2] According to a study conducted in the same location between 2012 and 2014, emotional stress was the leading cause of vitiligo in 78.8% of the cases.[16]

Physical trauma was found in 19% of patients. Depigmentation can occur in traumatized areas. This is thought to happen as a result of the release of inflammatory factors caused by an external stimulus, specifically trauma.[1]

One of the factors that contributes to the appearance of macular vitiligo in patients is genetics.[1] Around 15%-20% of vitiligo patients have relatives who also have the disease. 13.95% of the patients studied in Prasetya's (2019) study had genetic predisposing factors that caused vitiligo to appear on their skin.[12] This supports the theory that family history is a factor in the development of vitiligo.[1]

Thyroid disease, type 1 diabetes mellitus, pernicious anemia, rheumatoid arthritis, Addison disease, lupus, and Guillain-Barré syndrome (GBS) are all associated with vitiligo risk factors.[5] The most common autoimmune disease is thyroid disease.[1] Hypothyroidism and hyperthyroidism appeared in 18.5% of 15,126 vitiligo patients.[17] Several studies also state that the risk of developing thyroid disease in vitiligo patients doubles every five years, so it is recommended to re-screen every three years.[5] Vitiligo has also been linked to a number of systemic diseases, including obesity and metabolic syndrome. Systemic involvement in this disease is also influenced by glucose intolerance, insulin resistance, lipid abnormalities, and hyperchromocysteinemia.[18]

Multiple lesions were the most common lesions in up to 25 patients (81%). Rahmayanti and Rahmadewi (2016) found that multiple lesions

predominated in a study conducted at the same location from 2012 to 2014, with 78.5% of the patients having this number.[18] However, another study conducted in 2017 at the Dr. Soetomo General Academic Hospital yielded different results. Only half of the four patients who received NB-UVB phototherapy had multiple lesions.[12] The number of lesions in vitiligo patients is critical in determining the type of vitiligo. These lesions can be old macules that have developed or new macules that have developed.[19]

Lesions measuring 10 cm and 11-20 cm dominated the study sample with 5 patients (16%). Research conducted by Fauzia (2017) showed that 75% of vitiligo patients who were given NB-UVB therapy had lesions measuring 10cm.[2] Another study at the same location discovered that 83.5% (157 patients) had lesions less than 10 cm in size.[2] Vitiligo lesions typically begin as small (5 mm - 5 cm) lesions that grow into larger macules over time.[19] Lesions that are 20% of the body's surface area in size and do not respond to topical medications are frequently treated with NB-UVB. In patients with more than 5% of their body surface area affected, phototherapy can be considered first-line therapy.[1]

The most common type of vitiligo lesion in patients (52%), is generalized vitiligo. Suseno et al. (2018) discovered that 38.8% of the subjects studied had non-segmental (generalized and focal) lesions.[9] El-Husseiny et al. conducted a study at Ainshams University and Kobry Al Qubba Military Hospital from August 2018 to January 2019, and found that 92.5% of 483 patients had non-segmental vitiligo, with 55 having focal type vitiligo.[20] Focal vitiligo is a type of localized vitiligo that is distinguished by small, isolated spots. This type of vitiligo is thought to be a precursor to generalized vitiligo.[1]

Academic in conclusion, patients with vitiligo who underwent NB-UVB phototherapy at Dr. Soetomo General Hospital in 2019 were predominately male, between the ages of 17 and 25, employed in "other" occupations, and had a history of emotional stress. The lesions were typically multiple, less than 10 cm^2 or 11-20 cm^2 in size, and the most common form was generalized.

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