

Original Research Article

A study to compare clinico-histopathological and dermoscopic findings in patients of vitiligo

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ABSTRACT

Background: Vitiligo is an acquired disorder; characterised by well-defined depigmented macules and patches. Its diagnosis is clinical but histopathology aids in doubtful cases, histopathological findings depend on the duration of clinical lesions. Dermoscopy serves as an auxiliary tool for diagnostic confirmation and additionally aids in the evaluation of disease activity.

Methods: It's the hospital based observational study of 50 vitiligo patients. After ethical committee approval and patient's consenting, detailed history with clinical and dermatological examination was performed using a dermoscope (10X) and biopsy sample was sent for examination. The results were statistically analysed, discussed and their correlation with clinical diagnosis was established.

Results: Generalised vitiligo was the most common presentation found, with koebnerization signifying progressive disease. Epidermal hyperkeratosis and absence of melanocytes were found to be significant in stable disease. Perilesional/marginal hyperpigmentation was observed in stable disease, while perifollicular depigmentation, trichrome pattern, comet tail appearance, micro koebner's phenomenon and tapioca sago appearance were the findings significant in unstable disease.

Conclusions: Vitiligo is primarily a clinical diagnosis; additional modalities may be required either to confirm the diagnosis like histopathology or to assess the progression of disease with dermoscopy. Unstable disease display perifollicular depigmentation whereas stable disease display perifollicular pigmentation, and can be compared with epidermal hyperkeratosis and absence of melanocytes in the lesions of stable vitiligo on histopathology. Such studies with a greater number of cases are recommended for having better understanding of the findings.

Keywords: Vitiligo, Dermoscopy, Histopathology

INTRODUCTION

Vitiligo is an acquired disorder; characterised by well-defined depigmented macules and patches, resulting from the loss of functional melanocytes caused by autoimmune destruction in most cases. Its prevalence is 0.4-2% of world population and it may involve all races, though highest prevalence has been recorded in India and Mexico.¹ It is a multifactorial disorder related to both:

genetic and non-genetic factors. Vitiligo appears to affect both genders equally, but women are overrepresented among patients seeking clinical care. The exact cause of vitiligo is unknown though risk factors of vitiligo include a family history of other autoimmune diseases, such as hypothyroidism/hyperthyroidism, alopecia areata, and pernicious anaemia.

According to VGICC (vitiligo global issues consensus conference), vitiligo is classified into three major forms:² Non-segmental vitiligo (or simply, vitiligo); acrofacial, mucosal (Figure 1), generalised, universal, mixed (associated with SV) (Figure 2) and rare variants. Segmental vitiligo (Figure 3); unisegmental, bisegmental and plurisegmental. Undetermined/unclassified vitiligo; focal and mucosal (one site in isolation).

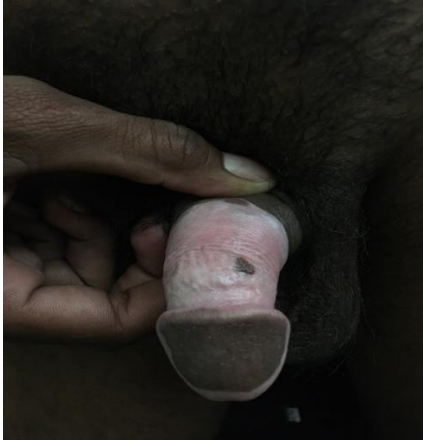


Figure 1: Genital (mucosal) vitiligo.



Figure 2: Mixed vitiligo.



Figure 3: Segmental vitiligo.

Diagnosis of vitiligo is clinical but histopathology aids in doubtful cases, histopathological findings depend on the duration of clinical lesions mostly. Vitiligo lesions show

an epidermis devoid of melanocytes in lesional areas, and sometimes sparse dermal perivascular and perifollicular lymphocytic infiltrates at the margins of early and active vitiligo lesions and active lesions.³ In vitiligo dermoscopy serves as an auxiliary tool for diagnostic confirmation and additionally aids in the evaluation of disease activity.

Dermoscopic findings associated with stability and repigmentation of vitiligo include marginal and perifollicular hyperpigmentation, reticular pigmentation, and marginal reticular pigmentation. Star-burst appearance, altered pigment network and comet-tail appearance are typical of progressive vitiligo.⁴ However, according to various studies the most important diagnostic clues are being observed in perifollicular region, since perifollicular pigmentation is noted in progressive lesions and perifollicular depigmentation is displayed in stable lesions.

Early evolving lesions need to be differentiated from other hypopigmented skin diseases and here comes the role of special investigations like histopathology and dermoscopy. As a non-invasive aid, dermoscopy has huge applications in diagnosis and ascertaining the activity of vitiligo lesions. Current study carried out in the tertiary care centre in Ujjain, is an attempt to further evaluate the diagnostic and prognostic applications of these special investigations in vitiligo.

METHODS

Current study was a hospital based observational study of 50 vitiligo patients in general population who were clinically diagnosed to have the vitiligo in the department of dermatology, R. D. Gardi medical college and C. R. Gardi hospital, Ujjain from January 2019 to December 2019. After the approval of the institutional ethical committee, written consent was taken from the participants prior to enrolling in the study and a pre structures proforma was used to collect base line data. Detailed history with clinical and dermatological examination was done using a dermoscope (10X) and biopsy sample was sent for examination, then the findings were noted. The results were statistically analysed (using SPSS 20) and discussed in detail and their correlation with clinical diagnosis was established.

Inclusion criteria

Inclusion criteria for current study were; all new patients with vitiligo presenting to RDGMC institution, all male/female patients of age group 15-60 years of age and patients who gave consent for the study.

Exclusion criteria

Exclusion criteria for current study were; other causes of hypopigmentary lesions, patients not cooperative or not willing to participate in the study and immunocompromised patients.

RESULTS

Amongst 50 patients enrolled, a mean age of 33.28 years was observed. The youngest patient in the study was 15

years old and the oldest was 60 years old. There were 26 (52%) males and 24 (48%) females, showing no gender bias in the study patients. Though, overall male to female ratio was 1.08:1.

Table 1: Histopathological features.

Histo-pathological feature	Current study n=50	Verma et al ¹⁷ n=30	Sharquie et al ¹⁸ n=25	Nagaral et al ¹⁹ n=150
Hyperkeratosis of epidermis (%)	52	63.3	-	13.3
Absence of melanocytes (%)	78	-	-	52
Presence of melanocytes (mild) (%)	44	-	-	13.3
Lymphocytic infiltration (%)	86	-	80	37.3

Table 2: Dermoscopic findings.

Dermoscopic findings (%)	Stability	Current study n=50	Purnima et al ⁴ n=50	Jha et al ²⁰ n=60	Vishal Wali et al ²¹ n=100	Al-Refu ²² n=48
Perifollicular pigmentation	Stable	52.9	87.5	22.2	38	75
	Unstable	39.4	18	-	17	
Perilesional/marginal hyperpigmentation	Stable	76.5	100	63	23	30
	Unstable	36.4	12	-	0	
Intra/perilesional erythema with telangiectasia	Stable	88.2	-	37	-	8
	Unstable	84.8	-	-	-	
Perifollicular depigmentation	Stable	41.2	-	-	-	-
	Unstable	75.8	82.4	9	-	-
Trichrome pattern	Stable	29.4	12.5	-	17	-
	Unstable	60.6	41	-	39	-
Leukotrichia	Stable	47.1	-	-	-	70
	Unstable	45.5	-	12.1	-	
Starburst appearance	Stable	11.8	0	-	0	-
	Unstable	30.3	9	30.3	12	-
Comet tail appearance	Stable	23.5	0	-	0	-
	Unstable	60.6	9	39.4	2	-
Micro koebner's phenomenon	Stable	11.8	-	-	-	-
	Unstable	57.6	-	15.2	-	-
Tapioca sago appearance	Stable	11.8	0	-	-	-
	Unstable	39.4	9	15.2	-	-

Majority of cases had vitiligo for less than 5 years of duration; 33 cases (66%), followed by cases which had disease between 6-10 years; 12 cases (24%). It was observed that the stability of the disease increases with duration of illness. Family history was supportive only in 10 (20%) patients. Clinical variants vulgaris 22 (44%), acral 15 (30%), acro-facial 6 (12%) distributions formed the bulk of patients (Figure 1). Clinically leukotrichia was appreciated in 46% of patients, but it was observed that the stability of disease is not related to presence or absence of leukotrichia in vitiligo. 9 (18%) patients had mucosal involvement out of which 7 had oral mucosal involvement and 2 had genital mucosa involved; and the rest 41 (82%) did not have mucosal involvement. Koebnerization was observed in 21 (42%) patients and was found significant for progressive disease. On

histopathological examination, it was observed that 26 cases presented with epidermal hyperkeratosis and also observed mild melanocytes (pigment producing cells) in 22 cases and absence of melanocytes (Figure 4) in 39 cases in present study. Lymphocytic infiltration (Figure 4) in the dermis was observed in 43 cases in the current study.

It was also observed that epidermal hyperkeratosis and absence of melanocytes were found to be significant in stable disease, while lymphocytic infiltration was present in most cases. On histopathology, changes in epidermis were related only to the melanocytes. They were found normal in initial lesions but were absent in well-established patches and patches of long duration. It was noted that melanocyte destruction was present at dermo-epidermal junction.

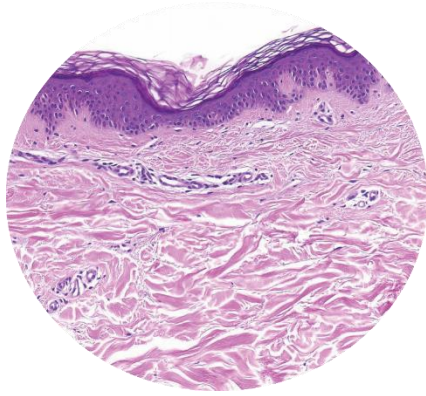


Figure 4: Absence of melanocytes and vacuolization in basal layer with perivascular lymphocytic infiltration in dermis.



Figure 5: Trichrome pattern.

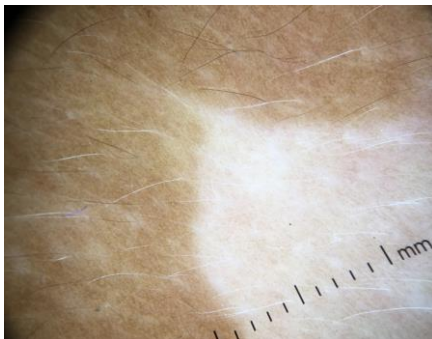


Figure 6: Comet tail appearance.

On dermoscopic examination, intra/perilesional erythema with telangiectasia (43 cases) was the most common finding observed followed by perifollicular depigmentation (32 cases) and perilesional/marginal hyperpigmentation and trichrome pattern (25 cases each). Perilesional/marginal hyperpigmentation ($p=0.016$) was observed to be significant finding in stable disease while perifollicular depigmentation ($p=0.028$), trichrome pattern (Figure 5) ($p=0.037$), comet tail appearance (Figure 6) ($p=0.018$), micro koebner's phenomenon ($p=0.002$) and tapioca sago appearance (Figure 7) ($p=0.05$) in unstable or progressive disease. Intra/perilesional erythema with telangiectasia and perifollicular pigmentation though are findings of stable

disease but were found not significant, also findings like leukotrichia and starburst appearance were not significant.

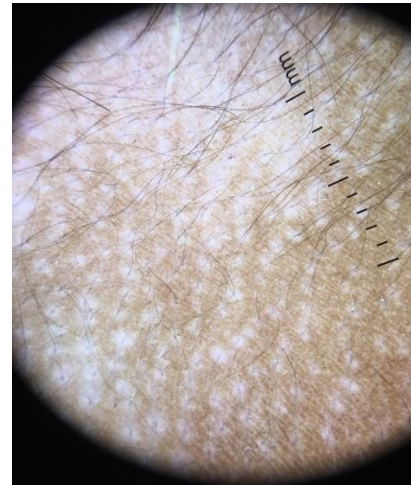


Figure 7: Tapioca sago appearance.

DISCUSSION

The present study was conducted in R. D. Gardi medical college a tertiary care centre, Ujjain. In the present study 50 cases of vitiligo were enrolled and their clinical, histopathological and dermoscopic features were analysed. According to the results obtained in this study, vitiligo was most commonly encountered in the age group 15-30 years, 26 (52%), followed by 46-60 years; 13 (26%) and the remaining were in the age group 31-45 years; 11(22%), with the mean age being 33.28 years varying from 18-48 years. Results were concordant with the studies done by Shankar et al with a mean age of 32.4 years and Shajil et al showing mean age of 25.59 years in their studies.^{5,6}

Male to female ratio of 1.08:1 was observed with no gender bias. Shankar et al (1.05:1), Dave et al (1.05:1), Gopal et al (1.17:1) and Shajil et al (1:1.6) also observed similar findings.⁵⁻⁸ The duration of vitiligo varied between 3 months and 40 years (mean 5.63 years) at presentation and majority 33 (66%) patients had presented within 5 years. This was found to be concordant with the study by Mahajan et al (mean 5.1 years) and slightly more than Shankar et al (mean 3.9 years) and Shajil et al (mean 3.3 years).^{5-7,9}

Family history was evident in 10 out of 50 patients (20%) and in studies of Mahajan et al (15.9%), Fatani et al (25%), Shajil et al (21.93%) and Shankar et al (20%).^{5-7,10}

In current study, vulgaris/generalised type was the most commonly reported clinical with 46%, followed by acral (30%) and acro-facial (12%), similar with Gopal et al, Martis et al, Shajil et al, and discordant with Shah et al.^{6,8,11,12} Leukotrichia was present in 46% cases which

was concordant with the study of Mogawer et al (46.5%) and discordant with the findings of Shajil et al (9.2%).^{23,6}

Though the reported incidence of KP in vitiligo varies widely and is reported to occur in 21-62% of patients, in our study it was present in 21 out of 50 cases (42%).¹³⁻¹⁶ According to the results obtained in this study, the most common histopathologic finding encountered was lymphocytic infiltration (80%) followed by absence of melanocytes (78%) (Table 1).

In current study, on histopathology, hyperkeratosis of epidermis was observed in 52% which was found significant statistically ($p=0.018$) concordant to the study done by Verma et al (63.3%) but discordant with Nagaral GV et al (13.3%), similarly lymphocytic infiltration was 86% in our study which was similar to Sharquie KE et al (80%) but different from Nagaral et al (37.7%).¹⁷⁻¹⁹ Also absence of melanocytes was 78% in our study which was also significant statistically ($p=0.048$) compared to 52% in Nagaral et al and presence of melanocytes (mild) was 44% in contrast to 13.3% of Nagaral et al.¹⁹

Dermoscopy is a non-invasive technique helping the doctor diagnoses vitiligo at an early stage and to label it as stable or unstable. In our study we found various findings which were both concordant and discordant with several studies (Table 2). On evaluating the dermoscopic features in our study with other authors, we found that perifollicular pigmentation was present in stable and repigmenting diseases in greater numbers when compared to unstable cases which was similar to the findings of Purnima et al and Wali et al.^{4,20} Jha et al and Al-Refu also found perifollicular pigmentation in 22.2% and 75% of patients respectively.^{21,22} Similarly, perilesional/marginal hyperpigmentation in this study was 76.5% in stable and 36.4% in unstable cases which was concordant with the findings of Purnima et al (100% and 12%) but much more than Wali et al (23% and 0%), while Jha et al and Al-Refu had seen perilesional/marginal hyperpigmentation in 22% and 75% of cases.^{4,20-22} Also, intra/perilesional erythema with telangiectasia though not observed by many authors it was the most common finding in my study with 88.2% in stable disease and 84.8% in unstable disease. Intra/perilesional erythema with telangiectasia was also seen by Jha et al in 37% cases and Al-Refu K in 8% cases.^{20,22}

Various other findings like perifollicular depigmentation was seen in 75.8% of unstable cases in our study which was concordant with the result of Purnima et al (82.4%) but discordant with Jha et al (9%), trichrome pattern was also seen more often in unstable disease with 60.6% in our study and 41% and 39% in studies of Purnima et al and Wali et al respectively, leukotrichia though a marker of unstable disease was present in almost equal ratios in both stable and unstable disease, 47.1% and 45.5% respectively.^{4,21} Leukotrichia was also observed by Jha et al (12.1%) and Al-Refu (70%) in their studies. Starburst pattern, comet tail appearance, micro koebner's

phenomenon and tapioca sago appearance all suggestive of unstable disease were present in significant numbers in our study too in unstable vitiligo like that of Purnima et al, Jha et al and Wali et al.^{4,20-22}

On calculating the significance of these findings statistically we found that only perilesional/marginal Hyperpigmentation was significant in stable disease ($p=0.016$), but perifollicular depigmentation ($p=0.028$), trichrome pattern ($p=0.037$), comet tail appearance ($p=0.018$), micro koebner's phenomenon ($p=0.002$) and tapioca sago appearance ($p=0.05$) were all significant for unstable disease.

Vitiligo is primarily a clinical diagnosis, but sometimes additional modalities may be required either to confirm the diagnosis like histopathological examination or to assess the progression of disease with the help of dermoscopic examination. Dermoscopy serves as an auxiliary tool in confirming the diagnosis and assessing stability of the disease. Dermoscopy allows appreciation of subtle features invisible to the naked eye. This is the first ever study to find out the statistically significant findings in stable and unstable vitiligo. In the current study, the most useful dermoscopic clues in vitiligo lesions are noted in the perifollicular region, unstable lesions display perifollicular depigmentation whereas stable lesions display perifollicular pigmentation, and these can be compared with the histopathological findings of epidermal hyperkeratosis and absence of melanocytes in the lesions of stable vitiligo. Various other dermoscopic findings significantly seen in unstable diseases were trichrome pattern, comet tail appearance, micro koebner's phenomenon and tapioca sago appearance. Such studies with a greater number of cases are recommended for having better understanding of the findings.

CONCLUSION

It was concluded that apart from histopathologic examination, dermoscopic study in cases of vitiligo can be used as an additional aid in confirming the diagnosis of vitiligo. Unstable disease display perifollicular depigmentation whereas stable disease display perifollicular pigmentation, and can be compared with epidermal hyperkeratosis and absence of melanocytes in the lesions of stable vitiligo on histopathology. Such studies with a greater number of cases are recommended for having better understanding of the findings.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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