DERMATOLOGY Rounds™

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Vitiligo

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Vitiligo is an acquired skin disorder characterized by well-defined areas of complete epidermal depigmentation. This issue of *Dermatology Rounds* provides an up-to-date overview of the epidemiology, pathophysiology, clinical features, and management of vitiligo.

Epidemiology

Vitiligo is a relatively common condition, with a reported frequency of 0.1% to 2%.[1] The age of onset is variable, but almost half of all cases present between 20 and 30 years of age.[2] Rarely, vitiligo may appear in infancy or old age.[3] The incidence is similar among both sexes and the condition affects all races and ethnic groups.

Pathophysiology

Vitiligo is an acquired disorder characterized by localized destruction of cutaneous melanocytes. While the precise etiology is still unknown, multiple theories have been proposed.

- There is evidence of *genetic* transmission in vitiligo, since 20% to 30 % of affected individuals report a positive family history.[2,4] Vitiligo in identical twins has been reported.[5] The disease appears to be associated with different HLA markers in different ethnic groups and more than 4 genetic loci may be involved.[6,7] Currently, there are ongoing gene mapping and cloning studies designed to further elucidate the genetics of this condition.
- According to the popular *autoimmune hypothesis,* melanocyte destruction is mediated by activated cytotoxic T lymphocytes.[8] In keeping with this theory, patients with vitiligo have a generally increased prevalence of other autoimmune disorders, including insulin-dependent diabetes mellitus, pernicious anemia, thyroiditis (Hashimoto's thyroiditis and Grave's disease), Addison's disease, lupus erythematosus, autoimmune hepatitis, and alopecia areata.[9]
- The *neural hypothesis* is based on an interaction of the melanocytes with the adjacent nerve cells. Accumulation of neurochemical mediators has been proposed to alter melanogenesis, leading to melanocyte death.
- According to the *self-destruct hypothesis,* melanocytes are destroyed by intermediate or metabolite free radicals formed during melanin biosynthesis.[10,11]
- Cytomegalovirus (CMV) DNA has been identified in the involved and uninvolved skin of some patients with vitiligo, leading to the hypothesis of *CMV-induced vitiligo.*[12]
- Extrinsic factors may also play a role in vitiligo; many patients attribute the onset of their disease to illness or emotional stress.[13] These hypotheses may not necessarily be separate and composite theories have been proposed. Most likely, vitiligo is a heterogeneous disease encompassing multiple etiologies.

Clinical features

Vitiligo is characterized by chalk-white, well-demarcated macules and patches, typically with convex borders. Clinical classification of vitiligo is depicted in Table 1, while clinical variants are demonstrated in Table 2. Vitiligo is one of the skin conditions associated with isomorphic Koebner phenomenon, whereby local trauma to the skin (eg, rubbing) can induce depigmented patches. Accordingly, extensor surfaces (ie, interphalangeal joints, metacarpal/metatarsal joints, elbows, and knees) are commonly involved. Vitiligo also has a predilection for acral and periorificial areas (eg, mouth, eyes, nose).

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Table 1: Classification of vitiligo	
Vitiligo type	**Features**
Localized or focal	Isolated macule or a few scattered macules, limited in both size and number Asymmetric May be an early evolutionary stage of one of the other types, in some cases Often treatment resistant
Segmental	Unilateral macules in a dermatomal or quasidermatomal distribution Trigeminal area is the most common site (>50%), followed by the neck (23%) and trunk (17%) Earlier onset, more stable course than generalized vitiligo, and not familial Typically, not associated with koebnerization
Generalized	Most common type of vitiligo Few to many widespread macules, often symmetrical Typically, periorificial, dorsal extremities, and genital involvement "Lip-tip" pattern: the skin around the mouth as well as on distal fingers and toes; lips, nipples, and genitalia (tip of the penis) affected.
Universalis	Widespread, with few normal residual macules of pigmentation

The diagnosis of vitiligo is largely clinical and biopsy is rarely necessary. Table 3 illustrates the differential diagnosis of depigmented macules. Wood's lamp accentuates areas of vitiligo and helps determine the extent of disease. Importantly, the Vitiligo Area Scoring Index (VASI) was recently developed by Hamzavi et al, to quantify disease involvement and improvement with treatment.[14]

Given an increased prevalence of other autoimmune diseases in patients with vitiligo, a targeted review of systems and screening tests may be warranted. While no evidence-based guidelines exist, many dermatologists routinely perform a complete blood count, thyroid function testing (including screening for antithyroid antibodies), and fasting glucose blood testing in patients with vitiligo. Parenthetically, treatment of associated diseases usually has no effect on vitiligo outcome.

The course of vitiligo is variable and no clear criteria exist to define active or stable disease. Rapid onset may lead to extensive depigmentation, or more commonly, a period of stability or slow progression ensues. Progression of vitiligo can be marked by gradual enlargement of the old lesions or by development of new ones. Up to 30% of patients report some spontaneous repigmentation, particularly in sun-exposed areas. Repigmentation usually begins from the hair infundibulum and dermal papilla, clinically giving rise to perifollicular hyperpigmentation.

Table 2: Clinical variants of vitiligo	
Clinical variant	**Features**
Vitiligo ponctue	Small confetti-like or discrete, hypomelanotic macules on otherwise normal or hyperpigmented macule
Vitiligo with inflammatory borders	Erythema at borders of vitiligo macule Can be pruritic
Blue vitiligo	Observed in areas already affected by post-inflammatory hyperpigmentation in which vitiligo develops.
Trichrome vitiligo	Intermediate tan zones seen halfway between the normal skin and the areas of depigmentation Intermedicate number of melanocytes in this zone, suggesting a slower centrifugal process
Quadrichrome vitiligo	Trichrome vitiligo plus macular perifollicular or marginal hyperpigmentation Fourth colour (dark brown) present at sites of perifollicular repigmentation, especially in darker skin phototypes

Management

It is paramount to consider and address the burden of illness in patients with vitiligo. Although the disease does not produce direct physical impairment, the effects of vitiligo may be cosmetically and psychologically devastating, leading to low self-esteem, poor body image, depression, and reduced quality of life.[15,16] Depigmentation is particularly disfiguring in patients of dark skin phototypes. Several associations and websites provide support and information for patients with vitiligo, including National Vitiligo Foundation (www.vitiligofoundation.org; Accessed December 6, 2005) and Vitiligo Support International (www.vitiligosupport.org; Accessed December 6, 2005).

A variety of therapeutic modalities exist in the management of vitiligo. Njoo et al, recently proposed evidence-based treatment guidelines.[17] It must be kept in mind, however, that vitiligo is often resistant to treatment, and more proximal and facial lesions respond better than those on acral areas. Importantly, a number of combination therapies can be used in vitiligo and the treatment is often an art, based on literature advances and physician's personal experience.

Photoprotection

Importance of sun-protection should be emphasized to all patients with vitiligo. Sunscreens help protect the involved skin from acute sunburn and minimize tanning of the normal skin, thus lessening the pigmentation contrast between the affected and normal skin. Preparations with a sun protection factor (SPF) of at least 30 should be used.

Table 3: Differential diagnosis of hypopigmented macules

Condition	Key features
Congenital	
Piebaldism	White forelock, confined to head and trunk
Tuberous sclerosis	Other syndromic features
Nevus anemicus or depigmentosus	Hypomelanotic as opposed to amelanotic
Acquired	
Idiopathic guttate hypomelanosis	Porcelain-white, discrete margins, may be depressed
Chemical leukoderma	History of exposure to chemicals, eg, phenolic germicides
Pityriasis alba	Usually in children, fuzzy margins, off-white colour
Pityriasis versicolor	Fine scaling, positive KOH
Leprosy	Endemic area, anaesthetic macule
Postinflammatory leukoderma	History of inflammatory skin condition
Morphea and lichen sclerosus	Skin is thin or sclerotic
Hypopigmented mycosis fungoides	Poikiloderma may be noted
Hypopigmented lupus erythematosus	Other features of lupus

KOH = potassium hydroxide

Cosmetic cover-up

The objective of a cover-up is to conceal the depigmented macules and patches. Significant improvements in the quality of life from using a cosmetic cover-up have been reported by patients with vitiligo.[15] A variety of formulations exists to match different skin hues and these usually can be found at cosmetic counters. Furthermore, specialized thicker preparations can be custom-mixed for most skin colours and textures. Dihydroxyacetone-containing self-tanners can also be used in vitiligo. Ideally, all preparations should provide adequate SPF photoprotection or alternatively, should be used in conjunction with sunscreen.

Topical corticosteroids

Topical corticosteroids are often used as first-line cost-effective therapy for patients with limited vitiligo (ie, covering < 10% of the body). Potent steroids (ie, class 1) are most effective, while hydrocortisone should be used for sensitive areas (eg, face and axillae) and for children. In a meta-analysis of randomized controlled studies, the pooled odds ratio of success with topical class 3 corticosteroids compared to placebo was 14.3; approximately 55% of patients with localized vitiligo responded to class 3 and 4 topical corticosteroids.[18] If repigmentation occurs, treatment can continue until no further response is noted. Patients should be followed during therapy to monitor for signs of steroid-induced skin atrophy. Topical corticosteroids may be used in conjunction with other modalities.

Topical immunomodulators

New topical calcineurin-inhibitor immunomodulators, tacrolimus (Protopic) ointment and pimecrolimus (Elidel) cream, have been successfully used in the treatment of vitiligo; they help avoid the corticosteroid-induced atrophogenic effects. In a retrospective review of 57 pediatric patients with vitiligo, at least partial response was noted to tacrolimus ointment on the head and neck in 89% and on the trunk and extremities in 63% of patients. Facial vitiligo of the segmental type demonstrated the best response rate.[19] Suppression of tumour necrosis factor (TNF)-α has been reported after topical tacrolimus treatment of vitiligo.[20] In a randomized controlled trial of tacrolimus for vitiligo, 20 children were treated twice daily for two months with clobetasol propionate 0.05% to one lesion and with tacrolimus 0.1% to a similar lesion in a blinded fashion; 90% of patients experienced some repigmentation and the mean percentage of lesion repigmentation was similar with tacrolimus and clobetasol (41.3% versus 49.3%).[21] Coskun et al, treated 10 patients with virtually bilateral symmetrical lesions of vitiligo with 0.05% clobetasol propionate twice daily over the lesion on the right side and topical 1% pimecrolimus twice daily over the lesion on the left side of the body. Both treatment modalities resulted in a comparable rate of repigmentation and response to treatment was better for lesions of the trunk and extremities.[22]

Phototherapy

Repigmentation of vitiligo with phototherapy can be explained by the action of immune cytokines and inflammatory mediators released due to phototherapy; these act as signals for melanocyte stimulation and migration from the hair follicle outer root sheath. Acral lesions are most resistant to treatment. Various forms of phototherapy can be used, including oral or topical (PUVA) psoralen followed by exposure to ultraviolet A radiation, BB-UVB (broad-band ultraviolet-B radiation), and NB-UVB (narrow-band ultraviolet-B radiation, 311 nm wavelength), each with associated treatment protocols. For instance, NB-UVB is typically started at 100-250 mJ/cm^2, increased by 10%-20% at each exposure until erythema is achieved within the lesions. Therapy is given 2-3 times per week. Oral PUVA is usually administered twice a week, starting at 0.5-1.0 J/cm^2. Often, 50-300 treatment sessions of phototherapy may be required. Chronic photodamage is a limiting factor and a 6-month trial of therapy is suggested. For more widespread vitiligo, oral PUVA is more practical and carries less risk of severe phototoxicity compared with topical phototherapy. Once again, distal hands and feet are poorly responsive. In a meta-analysis, PUVA and BB-UVB therapy were similarly effective in patients with generalized vitiligo, with 51% and 57% response rates, respectively.[18] However, PUVA was associated with more side effects. The side effects of oral PUVA include nausea, severe burns after accidental exposure to sunlight (even through glass) on the day of treatment, and an increased risk of developing cutaneous neoplasms. More recently, NB-UVB has emerged as an effective and well-tolerated treatment for vitiligo.[23,24]

Westerhof et al, compared the efficacy and safety of topical PUVA with unsubstituted psoralen and NB-UVB radiation, in patients with vitiligo. Both treatment modalities showed similar efficacy, but NB-UVB was associated with fewer side effects.[25]

Topical calcipotriene

Topical calcipotriene in combination with corticosteroids can repigment vitiligo, even in patients previously non-responsive to topical corticosteroids. In an open-label study of 12 children with vitiligo, using topical corticosteroids in the morning and topical calcipotriene in the evening, 83% responded to therapy, with an average of 95% repigmentation by body surface area. Four of the patients who responded had previously failed trials of topical corticosteroids alone. Eyelid and facial skin responded best to this therapy and none of the patients had adverse reactions to the treatment.[26] Combination therapy of topical calcipotriene and phototherapy (NB-UVB or PUVA) can also be used in the treatment of vitiligo.[27,28]

308-nm excimer laser

Treatment of vitiligo with the 308-nm excimer laser was initially reported by Spenser et al[29] and subsequently, several studies have confirmed its effectiveness.[30,31] Combination treatment with 308-nm excimer laser and tacrolimus ointment gives promising results. In 14 patients with vitiligo, Passeron et al demonstrated that the combination treatment of 0.1% tacrolimus ointment plus the 308-nm excimer laser is superior to 308-nm excimer laser monotherapy for the treatment of UV-resistant lesions (P<.002).[32]

Oral immunosupressives

Both high and low-dose formulations of oral corticosteroids have been occasionally used in patients with active vitiligo, leading to the arrest of disease progression.[33,34] Potential side effects are the limiting factor with this approach. Another immunosuppressive, levamisole, was initially reported to be a simple, safe, and fairly effective remedy for controlling the activity of the disease process in vitiligo patients with limited and slow-spreading disease.[35] This, however, has not been supported in a more recent randomized placebo-controlled double-blind study.[36]

Surgical minigrafting

Although not widely available, autologous minigrafting techniques can be successful in vitiligo cases recalcitrant to medical therapy, alone or in combination with medical therapy. For instance, phototherapy may often be required following the procedure to complete repigmenation and unify the colour between the graft sites. Surgical minigrafting is most practical for isolated, small macules that have been stable for >2 years. The demonstrated occurrence of koebnerization in donor sites of patients with generalized vitiligo restricts this procedure to those with limited cutaneous areas of vitiligo. This includes patients with segmental vitiligo that is typically not associated with koebnerization of normal skin. Autologous transplantation methods in vitiligo have been reviewed by Njoo.[37]

Depigmentation

In cases of extensive and therapy-resistant vitiligo, bleaching of non-affected areas to result in total white colour can be rarely considered. It is important to keep in mind the permanent and irreversible nature of this treatment. Monobenzylether of hydroquinone (MBEH) 20% cream can be used daily for 9-12 months and applied to all residual pigmented areas or cosmetically selected areas, leading to 90%-95% full bleaching within a year. Since application of MBEH may be associated with satellite depigmentation, this treatment cannot be used selectively to bleach certain areas of normal pigmentation, since there is a real likelihood that new and distant white macules will develop over the months of use. Common side effects of therapy include erythema, dryness, burning, and pruritus, particularly on the face. Contact sensitivity has been demonstrated.[38] The importance of photoprotection must be particularly emphasized with this therapy. ß-carotene (30-60 mg daily) can be used in conjunction with bleaching to give the skin a yellow hue, keeping in mind the uncommon side effect of diarrhea.

Other treatment options

A variety of other therapies have been attempted in patients with vitiligo. Tar therapy in vitiligo has been described by Urbanek.[39] Vitamin supplements shown to be beneficial in vitiligo include vitamin E (200-400 IU), vitamin C, folic acid, vitamin B_{12}, and high-potency multivitamins.[40] Oral ginkgo biloba has shown efficacy in a randomized trial of patients with limited, slow-spreading vitiligo.[41] It has been hypothesized that patients with vitiligo may have low catalase levels in their epidermis. Topical pseudocatalase cream (utilized twice-a-day) with or without ultraviolet light therapy, has been demonstrated to induce repigmentation in some patients.[42]

Approach to therapy

The choice of therapy in vitiligo depends on the extent of the disease, the stability or degree of progression, and the patient age group. In rapidly progressive disease, stabilization may be achieved with corticosteroids, eg, intramuscular triamcinolone (40 mg every 4-6 weeks, 3 cycles) for adults and oral prednisone (5-10 mg for up to 2-3 weeks) for

children. Therapies for children include topical steroids, topical immunomodulators, phototherapy (eg, NB-UVB), and calcipotriol. For patients beyond age 5 with more severe disease, NB-UVB can be quite effective. For localized or limited disease, topical immunomodulators are often used as first-line therapy; they are particularly effective for head and neck lesions. Some experts advocate their use in initial combination with topical steroids, for instance with a steroid used in the morning and an immunomodulator at night, for a month, later switching to immunomodulator application twice daily. Surgical minigrafting may be considered for limited stable disease. Phototherapy (eg, NB-UVB and PUVA) is a good initial choice of therapy for moderate-to-severe disease, ie, for patients with > 25% of body surface involvement or for those recalcitrant to topical agents. Depigmenting therapy may be considered for patients with extensive involvement. Vitiligo is difficult to treat and total repigmentation is rarely achieved; however, patients are often grateful for improvement of any extent.

References

1. Nordlund JJ. The epidemiology and genetics of vitiligo. *Clin Dermatol* 1997;15:875-8.
2. Majumder PP, Nordlund JJ, Nath SK. Pattern of familial aggregation of vitiligo. *Arch Dermatol* 1993;129:994-8.
3. Dogra S, Parsad D, Handa S, Kanwar AJ. Late onset vitiligo: a study of 182 patients. *Int J Dermatol* 2005;44:193-6.
4. Grimes PE. New insights and new therapies in vitiligo. *JAMA* 2005;293:730-5.
5. Mohr J. Vitiligo in a pair of monovular twins. *Acta Genet Stat Med* 1951;2:252-5.
6. Fain PR, Gowan K, LaBerge GS, et al. A genomewide screen for generalized vitiligo: confirmation of AIS1 on chromosome 1p31 and evidence for additional susceptibility loci. *Am J Hum Genet* 2003; 72:1560-4.
7. Arcos-Burgos M, Parodi E, Salgar M, et al. Vitiligo: complex segregation and linkage disequilibrium analyses with respect to microsatellite loci spanning the HLA. *Hum Genet* 2002;110:334-42.
8. Ongenae K, Van Geel N, Naeyaert JM. Evidence for an autoimmune pathogenesis of vitiligo. *Pigment Cell Res* 2003;16:90-100.
9. Bloch MH, Sowers JR. Vitiligo and polyglandular autoimmune endocrinopathy. *Cutis* 1985;36:417-9, 421.
10. Morrone A, Picardo M, de Luca C, Terminali O, Passi S, Ippolito F. Catecholamines and vitiligo. *Pigment Cell Res* 1992;5:65-9.
11. Rokos H, Beazley WD, Schallreuter KU. Oxidative stress in vitiligo: photo-oxidation of pterins produces H(2)O(2) and pterin-6-carboxylic acid. *Biochem Biophys Res Commun* 2002;292:805-11.
12. Grimes PE, Sevall JS, Vojdani A. Cytomegalovirus DNA identified in skin biopsy specimens of patients with vitiligo. *J Am Acad Dermatol* 1996;35:21-6.
13. Papadopoulos L, Bor R, Legg C, Hawk JL. Impact of life events on the onset of vitiligo in adults: preliminary evidence for a psychological dimension in aetiology. *Clin Exp Dermatol* 1998;23:243-8.
14. Hamzavi I, Jain H, McLean D, Shapiro J, Zeng H, Lui H. Parametric modeling of narrowband UV-B phototherapy for vitiligo using a novel quantitative tool: the Vitiligo Area Scoring Index. *Arch Dermatol* 2004;140:677-83.
15. Ongenae K, Dierckxsens L, Brochez L, van Geel N, Naeyaert JM. Quality of life and stigmatization profile in a cohort of vitiligo patients and effect of the use of camouflage. *Dermatology* 2005;210: 279-85.
16. Ongenae K, Van Geel N, De Schepper S, Naeyaert JM. Effect of vitiligo on self-reported health-related quality of life. *Br J Dermatol* 2005;152:1165-72.
17. Njoo MD, Westerhof W, Bos JD, Bossuyt PM. The development of guidelines for the treatment of vitiligo. Clinical Epidemiology Unit of the Istituto Dermopatico dell'Immacolata-Istituto di Recovero e Cura a Carattere Scientifico (IDI-IRCCS) and the Archives of Dermatology. *Arch Dermatol* 1999;135:1514-21.
18. Njoo MD, Spuls PI, Bos JD, Westerhof W, Bossuyt PM. Nonsurgical repigmentation therapies in vitiligo. Meta-analysis of the literature. *Arch Dermatol* 1998;134:1532-40.
19. Silverberg NB, Lin P, Travis L, et al. Tacrolimus ointment promotes repigmentation of vitiligo in children: a review of 57 cases. *J Am Acad Dermatol* 2004;51:760-6.
20. Grimes PE, Morris R, Avaniss-Aghajani E, Soriano T, Meraz M, Metzger A. Topical tacrolimus therapy for vitiligo: therapeutic responses and skin messenger RNA expression of proinflammatory cytokines. *J Am Acad Dermatol* 2004;51:52-61.
21. Lepe V, Moncada B, Castanedo-Cazares JP, Torres-Alvarez MB, Ortiz CA, Torres-Rubalcava AB. A double-blind randomized trial of 0.1% tacrolimus vs 0.05% clobetasol for the treatment of childhood vitiligo. *Arch Dermatol* 2003;139:581-5.
22. Coskun B, Saral Y, Turgut D. Topical 0.05% clobetasol propionate versus 1% pimecrolimus ointment in vitiligo. *Eur J Dermatol* 2005; 15:88-91.
23. Kanwar AJ, Dogra S, Parsad D, Kumar B. Narrow-band UVB for the treatment of vitiligo: an emerging effective and well-tolerated therapy. *Int J Dermatol* 2005;44:57-60.
24. Scherschun L, Kim JJ, Lim HW. Narrow-band ultraviolet B is a useful and well-tolerated treatment for vitiligo. *J Am Acad Dermatol* 2001;44:999-1003.
25. Westerhof W, Nieuweboer-Krobotova L. Treatment of vitiligo with UV-B radiation vs topical psoralen plus UV-A. *Arch Dermatol* 1997; 133:1525-8.
26. Travis LB, Silverberg NB. Calcipotriene and corticosteroid combination therapy for vitiligo. *Pediatr Dermatol* 2004;21:495-8.
27. Kullavanijaya P, Lim HW. Topical calcipotriene and narrowband ultraviolet B in the treatment of vitiligo. *Photodermatol Photoimmunol Photomed* 2004;20:248-51.
28. Cherif F, Azaiz MI, Ben Hamida A, Ben O, Dhari A. Calcipotriol and PUVA as treatment for vitiligo. *Dermatol Online J* 2003;9:4.
29. Spencer JM, Nossa R, Ajmeri J. Treatment of vitiligo with the 308-nm excimer laser: a pilot study. *J Am Acad Dermatol* 2002;46:727-31.
30. Hadi SM, Spencer JM, Lebwohl M. The use of the 308-nm excimer laser for the treatment of vitiligo. *Dermatol Surg* 2004;30:983-6.
31. Ostovari N, Passeron T, Zakaria W, et al. Treatment of vitiligo by 308-nm excimer laser: an evaluation of variables affecting treatment response. *Lasers Surg Med* 2004;35:152-6.
32. Passeron T, Ostovari N, Zakaria W et al. Topical tacrolimus and the 308-nm excimer laser: a synergistic combination for the treatment of vitiligo. *Arch Dermatol* 2004;140:1065-9.
33. Seiter S, Ugurel S, Tilgen W, Reinhold U. Use of high-dose methylprednisolone pulse therapy in patients with progressive and stable vitiligo. *Int J Dermatol* 2000;39:624-7.
34. Kim SM, Lee HS, Hann SK. The efficacy of low-dose oral corticosteroids in the treatment of vitiligo patients. *Int J Dermatol* 1999; 38:546-50.
35. Pasricha JS, Khera V. Effect of prolonged treatment with levamisole on vitiligo with limited and slow-spreading disease. *Int J Dermatol* 1994;33:584-7.
36. Agarwal S, Ramam M, Sharma VK, Khandpur S, Pal H, Pandey RM. A randomized placebo-controlled double-blind study of levamisole in the treatment of limited and slowly spreading vitiligo. *Br J Dermatol* 2005;153: 163-6.
37. Njoo MD, Westerhof W, Bos JD, Bossuyt PM. A systematic review of autologous transplantation methods in vitiligo. *Arch Dermatol* 1998;134:1543-9.
38. Lyon CC, Beck MH. Contact hypersensitivity to monobenzyl ether of hydroquinone used to treat vitiligo. *Contact Dermatitis* 1998;39: 132-3.
39. Urbanek RW. Tar vitiligo therapy. *J Am Acad Dermatol* 1983;8:755.
40. Juhlin L, Olsson MJ. Improvement of vitiligo after oral treatment with vitamin B12 and folic acid and the importance of sun exposure. *Acta Derm Venereol* 1997;77:460-2.
41. Parsad D, Pandhi R, Juneja A. Effectiveness of oral Ginkgo biloba in treating limited, slowly spreading vitiligo. *Clin Exp Dermatol* 2003; 28:285-7.
42. Schallreuter KU, Wood JM, Lemke KR, Levenig C. Treatment of vitiligo with a topical application of pseudocatalase and calcium in combination with short-term UVB exposure: a case study on 33 patients. *Dermatology* 1995;190:223-9.

Abstracts of Interest

The development of guidelines for the treatment of vitiligo.

NJOO MD, WESTERHOF W, BOS JD, BOSSUYT PM.

OBJECTIVE: To develop and introduce evidence-based guidelines for the treatment of vitiligo in children and in adults.

PATIENTS AND SETTING: Patients, residents, and dermatologists from the Department of Dermatology,

Academic Medical Center, University of Amsterdam, and the Netherlands Institute for Pigmentary Disorders in Amsterdam.

DESIGN: Scientific evidence obtained from 3 systematic reviews of the literature was combined with the results of 2 questionnaires and interviews of potential users of the guidelines, 3 internal expert meetings, and 1 local expert meeting, during which preliminary guidelines were presented and commented on. A final version of the guidelines was synthesized and disseminated among potential users. Six months after the introduction of these guidelines, their use was evaluated.

RESULTS: Before the development of the guidelines, there was no uniformity in treatment selection, and there was a variability in estimates of treatment outcome. The meta-analysis showed class 3 corticosteroids and narrowband UV-B to be the most effective and safest therapies for localized and for generalized vitiligo, respectively. From another systematic review, it could be concluded that patients with segmental, stable, or lip-tip vitiligo could be successfully treated with most autologous transplantation methods. For vitiligo universalis, results of the systematic review showed that depigmentation using monobenzone or a Q-switched ruby laser was equally effective. The final version of the guidelines consisted of a treatment scheme together with detailed treatment protocols. Implementation of the guidelines was evaluated in 5 physicians. After the introduction of these guidelines, they were followed in most adult cases with vitiligo (71% of patients with localized vitiligo, 82% with generalized vitiligo, 100% with stable or segmental vitiligo, and 80% with universal vitiligo). In children with vitiligo, the physicians adhered to the guidelines for 52% of the cases.

CONCLUSIONS: Guidelines for the treatment of vitiligo can be successfully developed and disseminated for daily clinical practice. The results of the implementation of these guidelines should be confirmed in other centers involving more clinicians.

Arch Dermatol 1999;135(12):1514-1521.

Clinical study of repigmentation patterns with different treatment modalities and their correlation with speed and stability of repigmentation in 352 vitiliginous patches.

PARSAD D, PANDHI R, DOGRA S, KUMAR B.

Because the etiopathogenesis of depigmentation in vitiligo is still obscure, the source of pigmentation in the repigmentating lesion and its stability is also not fully known. Several authors have shown on histopathology and electron microscopy predominantly a perifollicular spread of pigment. The aim of this study was to clinically assess the types of repigmentation patterns obtained with different treatment modalities and their correlation with speed and stability of repigmentation. A total of 125 patients with vitiligo on treatment with psoralens (topical and systemic psoralen-UVA [PUVA]), steroids (both topical and systemic), and topical calcipotriol, alone or in combination were enrolled. Representative lesions of vitiligo excluding mucosal sites were selected in each patient and photographed at baseline. Repigmentation was assessed and labeled as marginal, perifollicular, diffuse, or combined. The preselected patches were evaluated at 3 months to assess the speed of repigmentation. Retention of pigment (stability) was noted at 6 months, after the stoppage of active treatment. Of the 352 vitiligo patches selected, 194 (55%) showed predominant perifollicular repigmentation, of which a majority (127; 65.5%) were on systemic PUVA and 35 (18%) were on topical PUVA. Diffuse pigmentation was observed in 98 patches (27.8%) of which 66 (67.3%) were on topical steroids. Marginal repigmentation was seen in 15, of which the majority (80%) were on systemic PUVA and topical calcipotriol. Of the 28 total lesions showing marked repigmentation at 3 months, 22 lesions pigmented in a diffuse manner, 2 in a perifollicular pattern, and 4 showed a combined type of repigmentation. On follow-up, marginal repigmentation was the most stable (93.3%), followed by perifollicular (91.7%) and combined type (84.4%). Diffuse repigmentation was the least stable (78.5%). Psoralens predominantly exhibit a perifollicular pattern of repigmentation and steroids (topical/systemic), a diffuse type. The speed of repigmentation is much faster when initial repigmentation is of the diffuse type as compared with follicular repigmentation. The marginal and perifollicular repigmentation is more stable than the diffuse type of repigmentation.

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