Original Research Article

A study of dyschromic nails in patients with systemic lupus erythematosus

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Abstract

Background: Nail, an appendage of skin,helps us diagnose many diseases. The color of the nails itself can tell many tales. Dyschromia of nails is an abnormality in the color of the nails. Melanonychia is one such dyschromia where thenail plates appear brown or black. Melanonychia is seen in many conditions including connective tissue diseases, pregnancy, infections, trauma, malignancy, etc.

Aim of the study: The primary aim was to assess the existence of longitudinal melanonychia in Systemic Lupus Erythematosus patients. The secondary aim was to correlate the clinical associations of longitudinal melanonychia with the various multi-systemic manifestations of SLE.

Materials and methods: This was a cross-sectional study done at The Institute of Rheumatology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, Tamil Nadu during the period between January 2016 and June 2016. 150 patients of Systemic Lupus erythematosus (SLE) and 150 healthy controls for the presence of longitudinal melanonychia were studied. We found that the prevalence of longitudinal melanonychia in SLE was 21% (n=32) which was higher than in Rheumatoid arthritis patients and healthy controls.

Results: On further analyzing and comparing SLE patients with Melanonychia and SLE patients without melanonychia we found that SLE patients with Melanonychia had a statistically significant association with cutaneous manifestations of systemic lupus erythematosus.

Conclusion: Melanonychia is often overlooked and not given importance in the routine evaluation of a patient with systemic connective tissue disease. Considering the increased prevalence of melanonychia in SystemicLupus Erythematosus, it should be considered as an important lupus non-specific skin lesion. Larger studies are needed to further emphasize the importance of this skin manifestation.

Key words

Systemic Lupus Erythematosus (SLE), Melanonychia, Nail dyschromia, Rheumatoid Arthritis (RA).

Introduction

Dyschromia of nails refers to a change in the color of the nails.Melanonychia is a type of nail dyschromia associated with brown to black discoloration of the nail plate. In Greek 'Melas' means 'Black' and 'Onyx' means 'Nail'. Melanonychia frequently appears as a pigmented longitudinal band along with the nail plate [1]. Melanonychia can also be called melanonychia striata or longitudinal melanonychia [2]. Melanonychia may be due to melanocyte activation or melanocytic hyperplasia. In melanocyte activation, thereis an increase inthe production and deposition of melanin pigment in the nails. In melanocyte hyperplasia, there is an increase in the number of melanin pigment cells in nails.Longitudinal melanonychia can be caused by pregnancy, trauma, malignancy, Addison's disease, hyperthyroidism, Cushing's syndrome, SLE, Psoriasis, drugs like anti-malarials, and so on [3]. In our Lupus clinics, we noticedan increased prevalence of longitudinal melanonychia in patients with Systemic Lupus Erythematous (SLE). Hence we decided to study theexistence of melanonychiaand itsclinical associations in SLE patients [4]. Systemic lupus erythematosus is a systemic autoimmune disease affecting the skin, joints, nervous system, kidneys, and serosal membranes. Systemic lupus erythematosus is characterized by the production of an array of antibodies. Systemic lupus erythematosus is varying in severity ranging from mild skin involvement to severe life-threatening disease involving the internal organs [5]. Lupus affects both males and females with higher female preponderance. Systemic lupus erythematosus affects patients from newborn to geriatric age group with greater affinity to females of reproductive age group. Though there are various classification systems toprovide consistency in studying the Lupus population we have used SLICC (systemiclupus international collaborating clinics) 2012 criteria for defining the lupus population in this study. Skin is an important target of Lupus, cutaneous Lupus is classified into Lupus specific skin lesions and non-specific lesions [6]. Nail changes like dyschromia are non-specific skin lesions of systemic Lupus Erythematosus [7].

Materials and methods

This was a cross-sectional study done at The Institute of Rheumatology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, Tamil Nadu during the periodbetween January 2016 and June 2016. Three groups of patients were recruited into the study. Group 1 consisted of patients with Systemic lupus erythematosusas per Systemic Lupus Erythematosus International Collaborating Clinics 2012 Classification criteria; Group 2 consisted of patients withRheumatoid arthritis as per ACR/EULAR 2010 classification criteria for Rheumatoid arthritis and Group 3 consisted of healthy controls. The prevalence of longitudinal melanonychia among the three groups was studied. If the prevalence of longitudinal melanonychia was higher in the Systemic Lupus Erythematosus group compared to the other two groups, it was decided to assess the association of melanonychia in detail. Longitudinal melanonychia was studied alongwith the various clinical manifestations of SLE, markers of disease activity, and laboratory parameters including anti-ds DNA, C3, C4 levels, SR (Erythrocyte sedimentation rate), and CRP (C-Reactive Protein). These parameters were compared with age and sex-matched SLE patients without melanonychia.

Statistical analysis

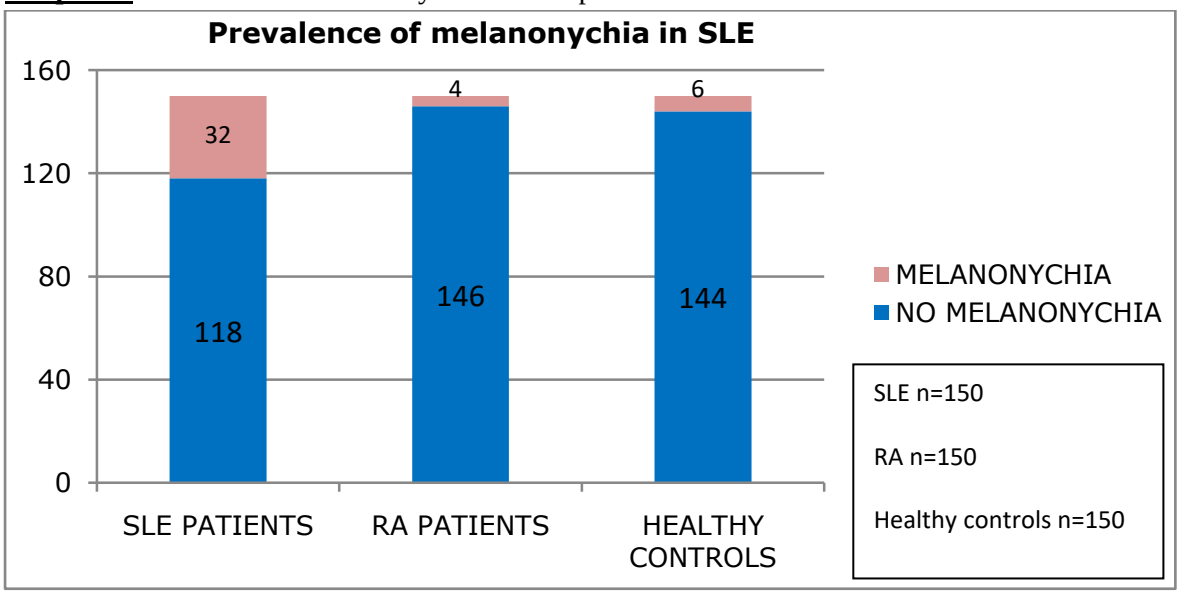
The collected data were analyzed using Stata 12 version. To describe in detail the collected data descriptive statistics, frequency analysis, percentage analysis, cross-tabulation was used for categorical variables, and the mean and S.D were used. To find the significance in categorical data Chi-Square test was used in the study. The

probability value of 0.05 was considered a significant level in the above statistical tools.

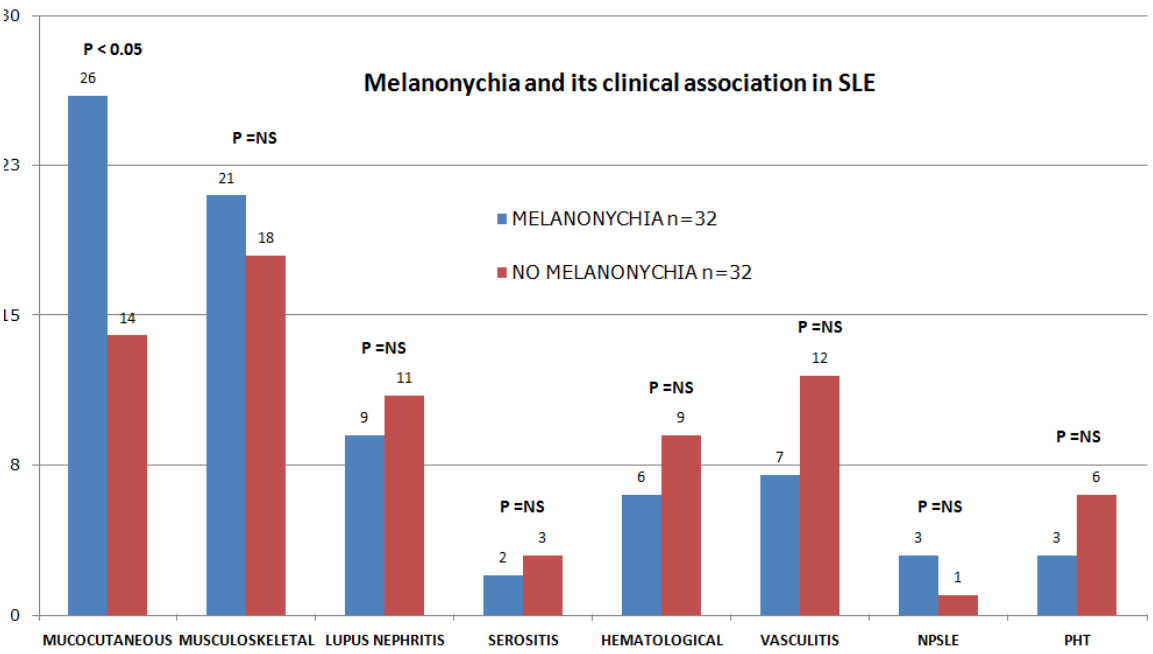
Results

In this study, 150 patients were recruited in each group and the prevalence of melanonychia was assessed by 2 different rheumatologists independently bydirect visual inspection under natural sunlight. The prevalence of melanonychia in patients with SLE was 21% (n=32), which was higher than in patients with Rheumatoid arthritis 2.66% (n=4) or healthy controls 4% (n=6) as depicted in **Graph - 1**. This indicates an increased prevalence of melanonychia among patients with Systemic Lupus Erythematosus.

Graph – 1: Prevalence of melanonychia in SLE patients.



Graph - 2: Comparison of melanonychia prevalence about the different manifestations of SLE.



The mean age of the Systemic Lupus Erythematosus patientpopulation was 29.3±10 years. 32 SLE patients had melanonychia and among them 30 were female and 2 were male. SLE Patients with melanonychia also hada significantly increased prevalence of other mucocutaneous manifestations of SLE (P-value <0.05). However, patients with melanonychia did not differ from those without melanonychia concerning age, sex distribution, disease duration, steroid intake, Hydroxychloroquine intake, hematological manifestations, neuropsychiatric SLE, Lupusnephritis, serositis, vasculitis, musculoskeletal manifestations, Pulmonary hypertension. Comparison of C3 levels, C4 levels, ESR, CRP showed no significant difference between SLE patients with and without melanonychia as depicted in **Graph - 2**.

Discussion

Prevalence of longitudinal melanonychia in Systemic Lupus Erythematosus patientswas significantly higher (23.1%) as compared to those with RA or in healthy controls. The presence of melanonychia was associated with a greater prevalence of othermucocutaneous manifestations of Systemic Lupus Erythematosus. However, in this study, no other clinical or immunological manifestations were foundto be associated with melanonychia in Lupus patients other than cutaneous manifestations [8]. SLE. Nabil PA, et al. reported 1 case of melanonychia in theirstudy of 39 cases of SLEwith nail changes. Vaughn et al reported in their study of 33 Black patients with Systemic Lupus Erythematosusthat 52% had dyschromia of nails [9]. RM Trueb, et al. reported a patient with longitudinal melanonychia and cutaneous lesions who had systemic lupus erythematosus on further evaluation [10]. Samitz MH, et al. insist in her study patients should be counseled for self-examination and report morphological changes in nails implying its importance.Through our study, we insistthat there isan increased prevalence of longitudinal melanonychia in patients with Systemic Lupus Erythematosus compared to Rheumatoid arthritis and healthy controls [11]. This study also stresses the importance of nail examination in a patient with suspected systemic lupuserythematosus. We did not assess the prevalence of melanonychia at the presentation of the disease. The possibility of drug-induced melanonychia could not be excluded since all our patients were on HCQ, cyclophosphamide, and methotrexate however, the prevalence of usage of HCQ and steroids were similar between those with and without melanonychia [12]. Another limitation was the small sample size which may alter the prevalence of melanonychia. However, our study delineated melanonychia as an important cutaneous clinical sign of Systemic Lupus Erythematosus [13, 14, 15].

Conclusion

Melanonychia is often overlooked and not given importance in the routine evaluation of a patient with systemic connective tissue disease. Considering the increased prevalence of melanonychia in SystemicLupus Erythematosus, it should be considered as an important lupus non-specific skin lesion. Larger studies are needed to further emphasize the importance of this skin manifestation.

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