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Research Article

**CYTOMEGALOVIRUS INFECTION AND ITS ANTINUCLEAR  
ANTIBODY AMONG PATIENTS OF VITILIGO**<sup>1</sup>Dr Sadaf Sultan, <sup>2</sup>Dr Faiqa Ijaz, <sup>3</sup>Dr Sohail Ahmad<sup>1</sup>Khyber Medical University Peshawar, <sup>2</sup>Fatima Jinnah Medical University Lahore, <sup>3</sup>Gomal Medical College Dera Ismail Khan.**Article Received:** November 2019    **Accepted:** December 2019    **Published:** January 2020**Abstract:**

Recently, using polymerase chain reaction (PCR) technique, cytomegalovirus DNA has been detected from discolored white spots in patients with vitiligo. Reactivation of infection and sporadic anti-CMV IgM circulating among patients infected with cytomegalovirus have been reported for years.

**Aim:** The purpose of this study was to determine cytomegalovirus and antinuclear antibody infection in patients with vitiligo.

**Place and duration:** From March 2019 to August 2019 for six months at the Medical and Dermatology Department of the Khyber Teaching Hospital Peshawar.

**Methods:** We studied 26 patients with clinical manifestations of vitiligo and some with medical history for years. Seven of these patients (26.92%) were positive for anti-CMV IgM, which showed the presence of cytomegalovirus infection in patients with vitiligo which was significantly different from control ( $p < 0.0001$ ).

**Results:** Of these 7 IgM positive CMV 6 patients (85.71%) were also positive for antinuclear antibodies (ANA). On the other hand, 7 cases (36.84%) of 19 negative cases for anti-CMV IgM were positive for antinuclear antibodies (ANA), so the difference was statistically significant ( $p < 0.05$ ).

**Conclusion:** The incidence of anti-CMV IgM was higher in patients with active vitiligo than in patients with stable vitiligo ( $p < 0.02$ ).

**Key words:** Antinuclear antibody (ANA), vitiligo, cytomegalovirus (CMV).

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**INTRODUCTION:**

It is estimated that between 1% and 3% of the world population suffers from vitiligo. The pathogenesis of vitiligo is not entirely clear, but the role of autoimmunity is considered to be the most likely pathogenesis. Viral infections play a role in the pathogenesis of various autoimmune diseases such as rheumatoid arthritis, type I diabetes, multiple sclerosis, lupus erythematosus, Hashimoto's thyroiditis and Sjogren's syndrome. Cytomegalovirus (CMV) infection has been suggested to be associated with various autoimmune symptoms such as hemolytic anemia, granulocytopenia and CD13-specific autoimmunity. Recently, cytomegalovirus DNA has been identified in skin biopsy samples from vitiligo patients using a PCR technique that improves significantly the detection of viral genomes in tissue samples. Infection and reactivation of sporadic positive CMV IgM antibodies in patients infected with cytomegalovirus has been reported for years. This project was designed to reassess the importance of anti-cytomegalovirus (CMV IgM) IgM among patients with albinism.

**MATERIALS AND METHODS:**

26 patients (14 women, 12 men) with clinical manifestations of vitiligo acquired in the OPD of Medicine and Dermatology of Khyber Teaching Hospital Peshawar were selected for this study. Consent was attained from all patients participating in the study. Each patient had a full history and skin examination. The average age of patients was 20 years. 15 patients had generalized vitiligo, 7 acrofacial lesions, 2 localized and 2 segmental albinism. The average duration of vitiligo was 2.5 years. 26 control people (12 men, 14 women) with a mean age of 26 years without history of vitiligo were selected, but with other skin diseases: androgenetic alopecia 2, in growing nail 1, acute urticaria 2,

leishmaniasis 1, chronic lichen 2, acanthosis nigricans 1, rosacea 3, hand eczema 4, keloid 1, basal cell carcinoma 1, acne 4, morphea 1, melasma 2, actinic keratosis 1 and case of eruption 1 drug. Their sera were collected and stored at -20 ° C until ELISA. An anti-CMV IgM ELISA test kit manufactured by Sorein Company, Italy was used for this study. The test was carried out according to the manufacturer's instructions. For each IgM anti-CMV positive sample, the test was repeated. An immunofluorescence (IF) test was performed to detect anti-nuclear antibody. Chi-squared analysis and Z test were used to assess statistical significance.

**RESULTS:**

Of these 26 sera from patients with vitiligo, 7 (26.92%) were anti-CMV IgM positive, indicating cytomegalovirus infection. The remaining 19 samples (73.08%) were IgM negative for CMV. 26 sera in the control group were CMV negative. 6 cases (85.71%) 7 positive anti-CMV IgM sera were also positive for antinuclear antibodies (ANA) in the IF test. Seven sera (36.84%) of 19 anti-CMV IgM negative sera were positive for the ANA test. The frequency of anti-CMV positive IgM among patients with albinism compared to controls was statistically significant ( $p < 0.0001$ ). Of the 7 patients with vitiligo with anti-CMV IgM 3 (42.85%) were male and 4 (57.14%) were female. The different incidence of antiCMV IgM among men and women was not statistically significant ( $p > 0.05$ ). The results of ANA analysis showed that statistical significance was observed among IgM positive for CMM and IgM negative for CMV. Of the total of 8 active patients with vitiligo, 6 cases (75%) were positive for anti-CMV IgM, while only 1 stable patient with vitiligo (5.55%) was positive for anti-CMV IgM, which is a statistically significant difference ( $p < 0.02$ ).

	anti-CMV IgM Positive	anti-CMV IgM negative
No. of cases	7	19
Mean age	23	17
<b>Sex:</b>		
Male	3	9
Female	4	10
Mean duration	2 years	3 years
<b>Progression:</b>		
Active	6 (75%)	2 (25%)
Stable	1 (5.55%)	17 (94.44%)
ANA (IF)	6 (85.71%)	7 (36.84%)
Acrofacial	3	4
Generalized	3	11
Segmental	1	0
Localized	0	4

**DISCUSSION:**

Vitiligo is diagnosed by the loss of epidermal melanocytes. Melanocyte destruction is reportedly due to humoral and cellular immune defects caused by viral infections. Albinism has reported many similar humoral and indirect immune abnormalities associated with CMV infection. About Cytomegalovirus belongs to the family of herpes viruses and has the ability to cause latent, primary, recurrent or persistent infection. Autoimmune abnormalities often develop during primary infection with human cytomegalovirus (HCMV). IgM-sensitive antibodies against uninfected human embryonic fibroblasts can be detected in most patients suffering from primary infection with human cytomegalovirus. The cell membrane component Mr 60K (mp60) has been shown to be a common antigenic epitope and that CMV consists of the protein Mr 38K (VP38) recognized by serum IgM in patients with primary infection. Evidence from DNA sequence analysis of human cytomegalovirus showed that the human cytomegalovirus encodes a molecule similar to MHC class I antigen of high eukaryotes, and this protein is responsible for the binding of beta 2-microglobulin. There is evidence of homology between early virus protein and the HLA-DR antigen. Expression of these self-reactive antigens in the cell membrane of cells indicates that they may function as binding sites for cytolytic IgM antibodies identified in CMV infected cells that mediate cell destruction. CMV infected cells also produce glycoprotein similar to class I antigens of the major histocompatibility complex (MHC). It has been suggested that CMV infection may mediate the destruction of melanocytes in vitiligo by stimulating abnormal humoral and cellular immune responses. Recently, cytomegalovirus DNA has been detected in skin biopsy samples of patients with vitiligo. Anti-CMV IgM reactivation and circulation has been observed for years after primary CMV infection in patients infected with cytomegalovirus. The results of this study show that CMV IgM tests can be used in patients with albinism, especially those with progressive active disease.

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