

Parvovirus B19 antibodies in diseases associated with vasculitis

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Recently, one of the most popular subjects is the etiologic relation between parvovirus B19 infections and vasculitis syndromes. Parvovirus infections cause arthropathy especially in adults and these arthropathies become chronic and last for a long time. Sometime there is relation between many arthropathies and some dermatologic signs. It is considered that parvovirus B19 may effect endothelial cells directly som of other different immunologic mechanisms play role indirectly. In this study, we investigated IgM class antibodies of parvovirus B19 which may have some significant effects on pathogenesis of hypersensitivity vasculitis, in patients with systemic lupus erythematosus, rheumatoid arthritis and Behget's disease. [Turk J Med Res 1996; 14(1):10-12]

Key Words: Vasculitis, Parvovirus B19

Parvovirus infections cause arthropathy mostly in adults. Especially proximal joints in hand, knee and ankle joints are affected in a symetrical fashion acutely. However some studies report arthropathies of long duration, even some of which become chronic. Though Parvovirus B19 (PV B19) DNA was determined in snovia of patients with reactive arthritis, essentially hypersensitivity reactions are thought to have role in the pathogenesis of arthritis (1). There are correlations between the onset of dermatologic signs and arthropathy in many cases (2). Rheumatoid arthritis-like cases were thought to be related with PV B19 infection and transient RF positivity was reported in some cases (3). In addition, any probable relation between systemic lupus erythematosus (SLE) and PV B19 infection was attempted to be disclosed (4,5).

Another focus of attention is the relation between vasculitic syndromes and PV B19 infection, recently (6,7). An etiologic relation between necrotizing vasculitis and chronic PV B19 was assumed and it was reported that PV B19 infection was eradicated in the body by IVIC therapy based on the assumption and the symptoms recovered (8). It is considered that either PV B19 can affect the endothelial cells directly

or some other immunological mechanisms can act indirectly (9).

We investigated IgM class antibodies of PV B19 in cases with hypersensitivity vasculitis, systemic lupus erythematosus, rheumatoid arthritis and Behget's disease, all of which the vasculitis has important role in pathogenesis.

MATERIALS AND METHODS

44 patients (27 females, 13 males), 16 patients with hypersensitivity vasculitis, 9 patients with systemic lupus erythematosus, 10 patients with rheumatoid arthritis, 9 patients with Behget's disease and 16 control group were involved in the study performed in Gülhane Military Medical School, Internal Medicine Department in 1995.

The diagnosis of hypersensitivity vasculitis was based on pathological evaluation of biopsy specimens. The diagnosis of SLE was based on the presence of at least five of the eleven criteria that Schumacher proposed (11). The diagnosis of Behget's disease as made in the presence of main criteria and two of the major criteria additionaly that were accepted internationaly.

IgM antibodies of Human PV B19 were measured by MRL Diagnostic kit and ELISA method. Plasma samples were obtained in the active phases of the diseases by venipuncture and kept at -27°C in deep freeze. It is sufficient IgM antibodies to be positive for the diagnosis of PV B19 infection (10).

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Negative control, cut-off calibration and positive control were performed for each measurement. In the evaluation of the results, the titers of IgM antibodies >1.20 were taken to be positive and the titers <0.80 were considered to be negative. The values between 0.80-1.20 were considered to be doubtful and those cases were re-measured. The ones that still doubtful were considered to be negative.

We did not form a control group because we attempt to determine the incidence of PV B19 infection in diseases with vasculitis.

RESULTS

Antibody titers, mean and standart values for each case are as shown in table 1.

Titers of IgM were higher than 1.20 in 15 of 16 patients with hypersensitivity vasculitis (93.7%), in 6 of 9 patients with SLE (66.6%) in 8 of 19 patients with RA (80%), in 7 of 9 patients with Behcet's disease (77.7%). Parvovirus B19 IgM antibodies titers were positive in 2 of control group (12.5%).

In comparison of these 4 groups, the highest titers of IgM were in the patients with SLE (3.06±2.1) and the lowest titers were in the patients with Behcet's disease (1.75±0.86).

In considering numerically, the group of patients with hypersensitivity vasculitis has the highest value (92.3%).

DISCUSSION

PV B19 was disclosed to be the agent responsible for some chronic hemolytic anaemias, compensated

hemolytic processes, various types of hypoproliferative anaemias and aplastic crises occurring in some unstable haemopoietic cases. The interactions of PV B19 in human body is not confined to haemopoietic system, it was also shown to be able to cause erythema infectiosum, syndrome of polyarthralgia and abortions (12,13). Besides, there have been recent reports defining close relations between PV B19 and some multi-systemic diseases (14).

Sorensen (15) reported a case of erythema infectiosum in the son, seven years old, which manifested two weeks after the onset of severe vasculitis in his father and IgM antibodies were positive in both cases. Finkel et al (8) reported three cases of systemic necrotizing vasculitis associated with Human PV B19.

Chassagne et al (4) reported Human PV B19 to cause exacerbations of SLE in a 71 years old woman. Luzzi et al (16) suggested Human PV B19 infection might have role in initiating rheumatoid arthritis.

Lefrere et al. (6) reported HPV B19 infection to be the causative agent of Henoch-Schoenlein purpura. This proposal was based on the positivity of IgM antibodies.

Stanley et al. (3) reported that HPV B19 infection should also be considered in cases with symmetrical polyarthralgiae or polyarthritis and acute or subacute onset and RF positivity. Reid et al. (2) reported HPV B19 to cause symmetrical arthritis of small joints often in adults and especially in women. Tsuda et al. (17) determined IgM antibodies in sera of 5 of 13 patients with lymphadenopathy of unknown etiology.

James et al. (19) reported HPV B19 to cause chronic joint complaints in adults and the possibility of acute arthritis following erythema infectiosum and

Table 1. Antibody titers, mean values, standart values for each case

Hypersensitivity Vasculitis (n:13)		S.L.E. (n:8)		R.Arthritis (n:10)		Behcet's Dis. (n:9)		Control Group	
Patients name	IgM titers	Patients name	IgM titers	Patients name	IgM titers	Patients name	IgM titers	Patients name	IgM titers
G.A.	3.88	M.Ö.	0.8	H.G.	3.83	Z.R.	1.24	CD.	0.72
H.B.	1.76	U.C.	3.1	S.M.	2.27	M.S.	1.02	F.Z.	1.10
E.T.	0.70	P.Y.	0.9	E.K.	1.23	K.L	3.80	M..Y.	1.44
H.K.	1.95	O.K.	6.7	H.C.	2.90	E.R.	1.32	D.Z.	0.8
M.K.	1.48	F.G.	4.6	Z.K.	0.85	M.F.	2.24	J.K.	0.9
A.C.	2.08	S.Y.	2.8	P.Y.	1.70	S.Y.	1.90	S.R.	1.08
D.M.	2.03	B.G.	4.9	G.C.	2.60	G.U.	1.16	U.M.	0.97
V.A.	1.27	O.Y.	1.1	S.Ş.	1.80	B.R.	1.27	Y.K.	0.88
O.G.	1.47	H.K.	2.7	OR.	3.10	D.S.	1.80	CM.	0.60
A.E.	820			R.Y.	0.95			B.U.	1.13
T.K.	3.16							Y.S.	0.5
A.Y.	1.6							E.K.	1.72
C.A.	2.6							Z.K.	1.12
B.T.	2.72							K.F.	0.73
Z.S.	2.13							P.S.	0.78
S.C.	1.27							B.K.	0.93
M.D.:2.39		M.D.: 3.066		M.D.: 2.123		M.D.: 1.750		M.D.: 0.962	
SD: 1.820		SD: 2.153		SD: 0.989		SD: 0.868		SD: 0.42	

onset of rheumatoid arthritis in some of these cases later. Leventhal et al. (5) reported HPV B19 can cause fibromyalgia and chronic fatigue syndrome.

Behçet's disease. These results obviously demonstrate the coexistence of PV B19 infection along with all those vasculitic diseases. Parvovirus either may have role in the etiology of these diseases or may take part in the process later after onset.

As a result, PV B19 infection has an important role in interaction of human beings with viruses. Co-ordinated studies combining the improvements in molecularly sciences with clinical experiences will facilitate understanding PV B19 infection and some other diseases and will help us to avoid and treat them.

Vaskülitte seyreden hastalıklarda Parvovirüs B-19 antikorları

Son zamanlarda ilgi çeken konulardan biri Parvovirüs B19 (PV B19) enfeksiyonu ile vaskülit sendromları arasında etyolojik bir ilişkinin varlığı dikkati çekmektedir. Parvovirüs enfeksiyonları daha çok erişkinlerde artropatiye sebep olmakta, hatta çok uzun süren ve kronikleşen artropatiler tanımlanmaktadır. Bir çok artropatik vaka ile dermatolojik bulguların gelişmesi arasında paralellik söz konusudur. Vaskülit sendromlarında, PV B19'un endotel üzerinde doğrudan etkili olabileceği veya dolaylı olarak farklı immünolojik mekanizmaların rol alması ihtimali üzerinde durulmaktadır. Çalışmamızda patolojisinde vaskülitin önemli rol oynadığı, Hipersensitivite vaskülit, Sistemik lupus eritematozus Romatoid artrit ve Behçet hastalarında PV B19 IgM antikorlarını araştırdık [Türk J Med Res 1996; U(1):10-12]

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