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SERUM IgG ANTIBODIES TO GD1a, GM1 AND GM3 GANGLIOSIDES IN A PATIENT ON DIALYSIS – *Case report*

SERUMSKA IgG ANTITELA NA GD1a, GM1 I GM3 GANGLIOZIDE KOD BOLESNIKA NA DIJALIZI – *Prikaz slučaja*

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Key words
demyelination, dialysis, ELISA, serum IgG anti-GD1a, anti-GM1 and anti-GM3 antibodies

Ključne reči
Demijelinizacija, dijaliza, ELISA, serumska IgG anti GD1a, anti GM1 i anti-GM3 antitela

Abstract

Introduction: The complex of anti-ganglioside antibodies may be useful diagnostic and prognostic tool of markers for neurodegeneration (GD1a), demyelination (GM1) and correlates with the loss of integrity of the blood brain barrier (GM3). The values of IgG anti-GD1a, anti-GM1 and anti-GM3 antibodies titers were detected by ELISA method in the blood serum. We use a patient on dialysis as an example of long-term toxicity. One of the types of therapies for treatment MS patients plasmapheresis is a type of dialysis. The case study involves a 70-years old woman, which is on dialysis for 1,5 years. The IgG titers of anti-GD1a and anti-GM3 antibodies are in norm. Conclusion: Significantly elevated serum IgG anti-GM1 antibodies titers were detected in our patient. The value of the titre of IgG antibodies against GM1 determined by ELISA technique showed the presence of weak demyelination, increasing with dialysis treatment but not neurodegeneration.

INTRODUCTION

A 70-years-old female patient fulfilled all diagnostic criteria for clinically definite kidney failure. She had a history of episodes of longitudinal kidney failure and one functioning kidney. Her exacerbations were treated on a 3 times weekly rate by hemodialysis. During the blood sampling the patient is in good general physical condition, takes food, with variable appetite and changeable vitality. Her blood tests were done regularly at Dialysis department of UMHATEM „N. I. Pirogov", Sofia and are in norm. The blood, for our tests, had no need for centrifugation, due to the addition of anticoagulants required for dialysis.

MATERIALS AND METHODS

ELISA Protokol

The serum anti-GD1a and anti-GM1 antibodies were estimated by the enzyme-linked immunosorbent assay (ELISA). The results of our team (by ELISA technique) [1] suggested correlation between the titer of serum antibodies against GM1, GD1a and GM3 and the occurrence of demyelination, neurodegeneration and violating the integrity of the blood brain barrier [2, 3, 4]. It has been already proven, by us [3, 4, 5] that there exist a correlation between the biomarkers of chronic remitting experimental allergic encephalomyelitis (CREAE), the animal model of multiple sclerosis (MS) and in MS patients. We were interested in the level of neurodegenerative and demyelinisation changes in

both the CNS and PNS in case of chronic intoxication like haemodialysis [6, 7].

One of the possible treatments for autoimmune diseases by means of mechanical treatment of the blood, is the plasmapheresis. It is effectively used in MS patients in attack [8, 9, 10]. It is applied to such patients combined with immunosuppressive treatment to suppress the basic process. A secondary increase in the synthesis of autoantibodies after plasmapheresis, has been observed in such patients which is another reason for the use of immunosuppressants in plasmapheresis.

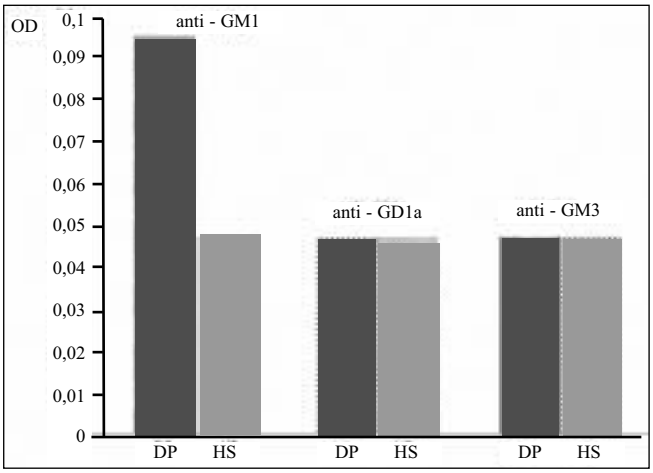
Data analysis

Results are reported as mean values ± SEM of n independent experiments and as relative part in %. Statistically analyzed by Student's t-test using statistical package. Differences were regarded as significant at $p<0.05$.

RESULTS

Significantly elevated serum IgG anti-GM1a antibodies titer was detected in patient's sera while on dialysis (Figure 1). The idea of the authors was to test the theory that the low level of toxins in the body of MS patients (consuming purified water, absence of preservatives and others in food) is directly related to the absence of seizures, and thereafter perspectives to patients with chronic relapsing form of MS on patients on haemodialysis. From our studies on mothers with MS we know that after a Cesarean section (presence of toxins in the body after general anesthesia), there is always accompanying weak attack during postpartum period. [5, 11].

***Figure 1**. Optical density of the serum IgG anti-GM1, anti-GD1a and anti-GM3 antibodies in dialysis patient*



OD – Optical density; DP – Dialisys patient; HS – Health subject

CONCLUSION

Our immunological studies demonstrated that in sera of patient on dialysis there is presence of high titer of anti-GM1 antibodies. We can conclude that the observed long-term dialisys patient has a weak presence of demyelination but not the expected by us neurodegeneration (Figure 1).

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Sažetak

Uvod: Ispitivanje anti-gangliozidnih antitela može biti koristan marker u dijagnostici i prognozi neurodegeneracije (GD1a), demijelinizacije (GM1) i u korelaciji je sa gubitkom integriteta krvno-moždane barijere (GM3). Vrednosti titra antitela IgG anti-GD1a, anti-GM1 i anti-GM3 su detektovana ELISA metodom u krvnom serumu. Jedan od tipova terapija za lečenje MS pacijenata plazmaferezom je vrsta dijalize. Prikazujemo pacijenta na dijalizi kao primer dugotrajne intoksikacije.

Slučaj: Studija slučaja obuhvata 70 godina staru ženu, koja je na dijalizi poslednjih 1,5 godinu. Nađen je značajno povišen titar serumskih IgG anti-GM1 antitela. Titri IgG anti-GD1a i anti-GM3 antitela bili su u granicama normale.

Zaključak: Povišena vrednost titra IgG antitela protiv GM1 utvrđena ELISA tehnikom pokazuje prisustvo slabe demijelinizacije, koja se povećava sa dijalizom, ali ne i neurodegeneracije.

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