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Biomarkeri reaktivnosti astrocita i neurona tijekom elektrokonvulzivne terapije

/ *Biomarkers of Astrocyte and Neuronal Reactivity During Electroconvulsive Therapy*

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Elektrokonvulzivna terapija (EKT) učinkovita je terapijska metoda u liječenju bolesnika s terapijski rezistentnom shizofrenijom. Unatoč suvremenim dokazima o njezinoj učinkovitosti i sigurnosti, u kliničkoj praksi i dalje je prisutna zabrinutost zbog mogućeg strukturnog oštećenja moždanog tkiva. U tom kontekstu, biomarkeri neuronalne i astroglijalne reaktivnosti mogu pridonijeti objektivnijoj procjeni neurobioloških učinaka ove terapijske metode. Cilj je ovoga istraživanja bio analizirati promjene serumskih koncentracija ubikvitin C-terminalne hidrolaze L1 (UCH-L1) i glijalnog fibrilarnog kiselog proteina (GFAP) tijekom terapijskog ciklusa EKT-a u bolesnika sa shizofrenijom. Istraživanje je provedeno kao retrospektivna

Electroconvulsive therapy (ECT) is an effective therapeutic method in the treatment of patients with treatment-resistant schizophrenia. Despite contemporary evidence of its effectiveness and safety, concern about potential structural damage to brain tissue remains present in clinical practice. In this context, biomarkers of neuronal and astroglial reactivity may contribute to a more objective assessment of the neurobiological effects of this therapeutic method. The aim of this study was to analyze changes in serum concentrations of ubiquitin C-terminal hydrolase L1 (UCH-L1) and glial fibrillary acidic protein (GFAP) during a therapeutic course of ECT in patients with schizophrenia. The study was conducted as a retrospective clinical study on 34 patients with schizophrenia treated with ECT at the Clinic for

klinička studija na 34 bolesnika sa shizofrenijom liječenih EKT-om na Klinici za psihijatriju KBC-a „Sestre milosrdnice“ u Zagrebu. Serumske koncentracije UCH-L1 i GFAP-a određivane su prije i nakon 1., 6. i 12. sesije EKT-a. Promjene koncentracija analizirane su općim linearnim modelom za ponovljena mjerenja, s obzirom na sesiju EKT-a i vrijeme mjerenja. Za UCH-L1 utvrđen je značajan multivarijatni učinak sesije te značajna interakcija sesije i vremena mjerenja, što upućuje na fazno ovisan obrazac promjena tijekom EKT ciklusa. Najizraženiji porast zabilježen je nakon prve sesije, dok u kasnijim fazama nije uočen obrazac daljnjeg progresivnog porasta. Za GFAP glavni učinci sesije i vremena mjerenja nisu bili statistički značajni, no utvrđena je značajna interakcija sesije i vremena mjerenja, uz promjenjiv i nelinearan obrazac promjena. Dobiveni nalazi pokazuju da primjena EKT-a u bolesnika sa shizofrenijom nije bila povezana s trajnim niti progresivnim porastom biomarkera neuronalne i astroglijalne reaktivnosti. Rezultati dodatno podupiru sigurnosni profil EKT-a te sugeriraju da promjene UCH-L1 i GFAP-a tijekom terapijskog ciklusa vjerojatnije odražavaju fazno ovisne i reverzibilne neurobiološke procese nego strukturno oštećenje moždanog tkiva.

Psychiatry, „Sisters of Charity“ University Hospital in Zagreb. Serum concentrations of UCH-L1 and GFAP were measured before and after the 1st, 6th, and 12th ECT sessions. Changes in concentrations were analyzed using a general linear model for repeated measures, with respect to ECT session and time of measurement. For UCH-L1, a significant multivariate effect of session and a significant interaction between session and time of measurement were found, indicating a phase-dependent pattern of changes during the ECT course. The most pronounced increase was observed after the first session, while no pattern of further progressive increase was detected in the later phases. For GFAP, the main effects of session and time of measurement were not statistically significant, but a significant interaction between session and time of measurement was found, with a variable and nonlinear pattern of change. The findings show that the use of ECT in patients with schizophrenia was not associated with a permanent or progressive increase in biomarkers of neuronal and astroglial reactivity. The results further support the safety profile of ECT and suggest that changes in UCH-L1 and GFAP during the therapeutic course more likely reflect phase-dependent and reversible neurobiological processes rather than structural damage to brain tissue.