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Abstract

Biomarkers and Suicidal Ideation in Depression: A Pilot Study Combining Clinical and Laboratory Data †

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Major Depressive Disorder (MDD) is strongly associated with suicidal behavior. Thyroid dysfunction and autoimmunity have been implicated through immuno-inflammatory (↑IL-1β/IL-6/TNF-α) and neurotrophic (BDNF) pathways. Levothyroxine and antidepressants may influence these biomarkers, affecting clinical response. This paper investigated associations between psychometric scales and biochemical, hormonal, hematological, and clinical features to better characterize suicide risk and treatment outcomes in MDD. Thirty-four MDD patients from UBS 17 (Planaltina-DF) and UBS 3 (Samambaia-DF) completed the Beck Depression Inventory (BDI) and Beck Scale for Suicide Ideation (BSS). Clinical data and blood samples were collected for biochemical and hormonal analysis. The study was approved by CEP-FEPECS and CONEP (CAAE 22434819.0.0000.8093). Data were analyzed using SPSS v.28 ($\alpha = 5\%$). BDI scores moderately correlated with total BSS scores ($\rho = 0.563$; $p < 0.001$). Associations between BDI and BSS TeS were weak ($\rho = 0.249$; $p = 0.155$) with a trend between BSS total and BSS TeS ($\rho = 0.303$; $p = 0.081$). Patients without clinical improvement showed higher BSS scores (median 7 vs. 4; $p \approx 0.05$–0.10). In a subsample (≈13), higher BSS TeS correlated with lower segmented neutrophils, reduced absolute bands, and lymphocytosis. Free T4 was inversely associated with BSS TeS ($\rho = -0.630$; $p = 0.021$). Glycemia, HbA1c, and lipid levels showed no consistent links. Integrating BDI and BSS enhances suicide risk stratification in MDD. Blood counts and free T4 levels may serve as exploratory markers for monitoring thyroid function. Larger studies are required to validate results.

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