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PHENYLALANINE AND TYROSINE CONCENTRATIONS IN EUTHYMIC BIPOLAR DISORDER

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Background: Individuals with bipolar disorder (BD) are differentially affected by insulin resistance. Individuals without history of mental disorder with insulin resistance usually have high peripheral concentrations of phenylalanine (PHE) and tyrosine (TYR) together. Catecholamine dysfunction is described to be a state-dependend phenomen in patients suffering from BD. Catecholamines are synthesized from essential amino acids PHE and TYR which are biotransformed to dopamine and subsequently converted to nor/adrenaline. Amino acid dysregulation may be a possible mediator of insulin resistance in BD.

Patients/Methods: Peripheral PHE and TYR concentrations were investigated in euthymic adults with BD. Amino acid differences between normal and overweight individuals with BD were evaluated and outcomes were correlated with the measures of glucose homeostasis.

Results: Mean plasma PHE to TYR ratio (PHE/TYR) was at the upper limit of the normal range in the whole sample. Enrolled subjects with PHE/TYR beyond the limits of normal exhibited the highest number of prior affective episodes. Sex-specific differences were noted as overweight BD females showed different profiles than normal-weight women. In the overweight females, PHE and TYR concentrations were significantly higher compared to normal-weight women. Significant correlations were noticed between PHE, TYR and PHE/TYR with insulin/Homeostasis Model of Assessment (HOMA)-IR in the whole sample and the subgroup of BD women.
Conclusion: These significant differences in gender, amino acid pathways and in correlations with immune marker as well as insulin function have not been reported previously. Taken together, increased levels of PHE in BD should be considered when adjudicating diabetes risk especially in women.

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