Vitamin D serum level and its correlation with Major Depressive Disorder (MDD) and Schizophrenia

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BACKGROUND

- Vitamin D may contribute to the development of psychiatric diseases. However, this association is still controversial, (Vidgren et al., 2018).
- Vitamin D deficient individuals had 3.5 higher odds of developing depression in comparison to those with sufficient vitamin D (Sherchand et al., 2018).
- Vitamin D deficient participants were 2.16 times more likely to have schizophrenia than vitamin D sufficient participants (Valipour et al., 2014.).
- Whether vitamin D can differentiate between psychiatric diseases is still a matter of controversy (Cui et al., 2015).

METHODS

- The clinical sample of this study consisted of a convenient sample of patients (aged between 20 and 50 years) diagnosed with MDD (20) and schizophrenia (20) selected from the outpatient clinics of Ain Shams university psychiatry department, Cairo, Egypt, in the period between January 2018 and January 2019.
- Exclusion criteria: Past history of psychiatric disorders other than MDD or schizophrenia, pregnant females and medical conditions that might affect vitamin D levels, and who refused to sign consent.
- Healthy volunteers (20) were included as a control group; having no history of psychiatric diseases, medical diseases or receiving any medications that may affect vitamin D level.
- All subjects were subjected to:
 - A complete history data sheet (Ain Shams University Sheet).
 - Structured Clinical Interview for DSM-IV Axis I (SCID I) (Arabic version).
 - ELISA: to measure 25-OH Vit D.

RESULTS

Illness characteristics	MDD	Schizophrenia	P-value
	N=20 (%)	N=20 (%)	
Age of onset (years) Mean±SD	26.6±6.5	25.1±6.8	0.482
Duration (years) Mean±SD	1.8±1.5	7.6±6.6	<0.001*
Number of Episodes Mean±SD	1.4±0.6	2.4±1.0	<0.001*
Treatment			
Monotherapy	10 (50%)	8 (40%)	0.525
Polytherapy	10 (50%)	12 (60%)	

Table (1): Clinical characteristics among patients' groups

Figure 1: Vitamin D serum variables among the study groups

This figure shows highly significant difference : both groups of patients showed lower levels of serum vitamin D level when compared with healthy controls (P= <0.001).

Group	AUC	SE	P-value	95% CI	Cut-off	Sensitivity	Specificity	DA	PPV	NPV
MDD vs control	0.823	0.065	<0.001*	0.695–0.950	≤14	60%	90%	75%	85.7%	69.2%
Schizophrenia vs control	0.715	0.083	0.020*	0.552–0.878	≤14	50%	90%	70%	83.3%	64.3%
MDD vs Schizophrenia	0.596	0.091	0.298	0.417–0.775	--					

Table (2): Diagnostic performance of vitamin D in differentiation between study groups

CONCLUSIONS

- Low serum vitamin D levels may play a role in the pathogenesis of both major depressive disorder (MDD) and schizophrenia.
- Vitamin D in both MDD and schizophrenia groups is low when compared to control group.
- There was no significant difference in vitamin D status that could help differentiate between schizophrenia and depression.
- Future studies are warranted to elucidate the role of vitamin D in psychiatric conditions.

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RESULTS CONTINUED

Figure (2): ROC curve for vitamin D in differentiating MDD group from schizophrenia group.

This figure shows there was non-significant diagnostic performance for vitamin D level in differentiating MDD group from schizophrenia group.

FURTHER INFORMATION

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