Relation of serum vitamin B12 level to premature ejaculation

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ABSTRACT

Premature ejaculation (PE) is defined as short ejaculatory latency and lack of control upon ejaculation. Vitamin B12 is an essential and vitally important in DNA synthesis, nervous system functions and regulation of numerous other B12- dependent metabolic processes. vitamin B12 plays integral roles in the metabolism of NO, homo cysteine and 5-HT. The aim of our study was to investigate whether a relationship exists between serum vitamin B12 levels and presence of PE. It was a cross-section, case-control study included 60 subjects divided into 2 groups. Patients group included 30 PE patients, and control group included 30 healthy matched subjects. The participants completed questionnaires concerning sexual health status including Premature Ejaculation Diagnostic Tool (PEDT) and International Index of Erectile Function (IIEF). Serum vitamin B12 was analyzed using ELISA technique. The mean IELT values in the PE group were significantly lower than in the control group ($p < .0001$). PE patients reported significantly lower vitamin B12 levels compared with the controls ($p < .001$). Patients with PE had lower vitamin B12 levels compared with normal men with a negative significant correlation between serum vitamin B12 level and PEDT score.

KEYWORDS :PE, vitamin B12. PEDT, IIED.

INTRODUCTION

Premature ejaculation is defined as short ejaculatory latency and lack of control upon ejaculation and described as one of the most common forms of sexual dysfunction in men **(Althof et al., 2014).** The real prevalence of PE remains unclear due to variety of definitions of PE and of the variability in perception of normal ejaculatory function between countries, patients and partners, epidemiological studies have shown that approximately 20%–30% of men have complaints of PE **(Serefoglu et al., 2014).** The control of male ejaculatory function is a multifunctional process involving sympathetic neuronal input, release of the ductus ejaculatory closure resistance and coordinated

contraction of the seminal vesicle and ductus deferens smooth muscle**.** Vitamin B12 is of importance in the synthesis of methionine from homocysteine, which requires vitamin B12 as a cofactor. It is known as a cofactor in the formation of S-adenosylmethionine, an intermediate for production of serotonin, other monoamine neurotransmitters and catecholamines, by providing the methyl group for the conversion of methionine to S-adenosylmethionine and itself has been shown to influence 5- HT metabolism **(Bottiglieri, 2013).** Also vitamin B12 plays integral roles in the metabolism of NO, homo cysteine and 5-HT **(Standring, 2005).** It was reported that vitamin B12 supplementation produced an antidepressant-like effect, mediated by an interaction with the noradrenergic receptors (a1 and a2) and serotonergic receptors (5- HT1A and 5- HT2A/2C) **(Bottiglieri, 2013).** Our aim was to investigate whether a relationship exists between blood vitamin B12 levels and presence of PE by comparing with men those who did not report PE. We also evaluated whether the vitamin B12 levels were correlated with the PEDT scores and self-reported IELT.

MATERIAL AND METHODS

It was a cross-section, case-control study included 60 subjects divided into 2 groups. Patients group included 30 PE patients, and control group included 30 healthy matched subjects. The participants completed questionnaires concerning sexual health status including Premature Ejaculation Diagnostic Tool (PEDT) and International Index of Erectile Function (IIEF). Serum vitamin B12 was analyzed using ELISA technique. The study plan was accepted by the Ethical committee of Faculty of Medicine, Fayoum University.

Evaluations of the participants

The subjects were eligible if they (i) were between the ages of 18 and 40; (ii) were in a stable, monogamous, heterosexual relationship with the same, nonpregnant, sexually active partner within the last 6 months; (iii) had PE for at least 6 months duration and were seeking medical aid for complaints of PE; (iv) did not have a history of any significant psychiatric disorder or sexual abuse reported by patient and/or his partner; (v) did not have any organic cause for PE (evaluated by urinalysis, biochemical, haematological and endocrine testing), including anatomical abnormalities; (vi) did not have any other malignancy or chronic diseases which might interfere with mental and sexual health; (vii) did not have alcohol or substance abuse; (viii) did not have prior urogenital surgery (except cystoscopy); (ix) had a normal erectile function (the IIEF-5 score of ≥ 22); (x) were not suffering from any sexual disorders other than lifelong PE.

Statistical analysis

Data were collected, revised, coded and entered to the Statistical Package for Social Science (IBM SPSS) version 23. The quantitative data were presented as mean, standard deviations and ranges when their distribution found parametric. Also qualitative variables were presented as number and percentages. The comparison between groups regarding qualitative data was done by using Chi-square test .The comparison between two independent groups with quantitative data and parametric distribution were done by using Independent t-test. The comparison between more than two independent groups with quantitative data and parametric distribution were done by using One Way Analysis of Variance (ANOVA).Spearman correlation coefficients were used to

assess the correlation between two quantitative parameters in the same group. Receiver operating characteristic curve (ROC) were used to assess the best cut off point with its sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and area under curve (AUC). The confidence interval was set to 95% and the margin of error accepted was set to 5%.

RESULTS

There was a highly statistically significant difference between patients group and control with p value < 0.01, as regard Serum Vit B12 levels (fig 1).
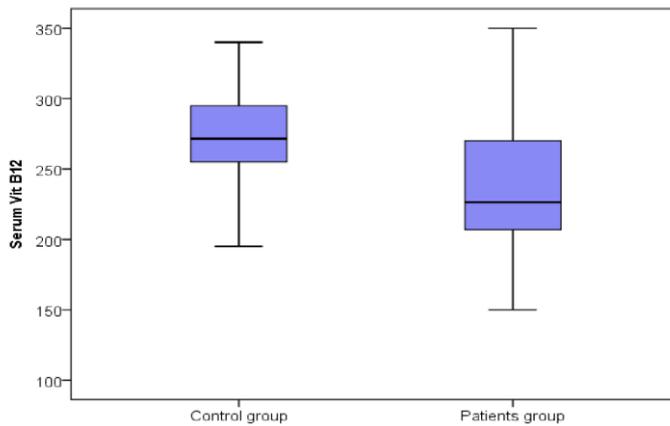

Figure (1): Comparison between control group and patients group regarding serum vit B12.

There was a very highly statistically significant difference between patients group and control with p value < 0.001, as regard PEDT scores (table 1).

PEDT	Control group	Patients group	Test value	p-value	Sig.
	No. = 30	No. = 30			
Mean ± SD	5.47 ± 1.76	12.80 ± 2.61	12.784•	0.000	vHS
Range	2 – 8	9 – 19			
Normal	30 (100.0%)	0 (0.0%)			
Border line	0 (0.0%)	9 (30.0%)			
Mild	0 (0.0%)	18 (60.0%)	60.000*	0.000	vHS
Moderate	0 (0.0%)	2 (6.7%)			
Severe	0 (0.0%)	1 (3.3%)			

There was a statistically significant negative correlation between serum Vit B12 and PEDT with p value < 0.05 (fig2).
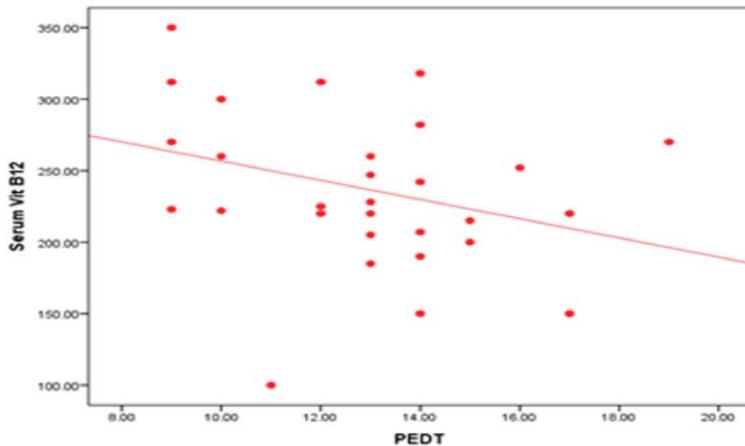

Figure (2): correlation between Vit b12 and PEDT.

DISCUSSION

To our knowledge, this is the first case–control study in Egypt demonstrating inverse association between serum vitamin B12 levels and PE. The main aim of this study was to investigate the relationship between serum vitamin B12 levels and PE. By applying a cross section case–control design, we selected two groups of PE and non-PE patients and purposed to show the accuracy of vitamin B12 levels in finding the relation with PE. There was a highly statistically significant difference between patients group and control with p value < 0.001, as regard PEDT scores. The scores were much higher in PE patients than that of normal individual, as according to PEDT score the higher the score the more severe the disease. This study showed a highly statistically significant difference between patients group and control with p value = 0.009, as regard Serum vitamin B12 levels. Serum vitamin B12 levels in PE patients were significantly lower than that of normal controls. This was in agreement with **Kadihasanoglu**

et al., in **2016** who found that PE patients reported significantly lower vitamin B12 levels compared with the control (213.14 vs. 265.89 ng ml−1; p < .001). **Bottiglieri,** in **2013** reported that it can be suggested that vitamin B12 might be closely related to the mechanisms of PE as vitamin B12 supplementation produced an antidepressant-like effect, mediated by an interaction with the noradrenergic receptors (a1 and a2) and serotonergic receptors (5-HT1A and 5-HT2A/2C). Vitamin B12 is of importance in the synthesis of methionine from homocysteine, vitamin B12 is known as a cofactor in the formation of S-adenosylmethionine, an intermediate for production of serotonin, other monoamine neurotransmitters and catecholamines (**Bottiglieri, 2013**). Thus, absence of vitamin B12 has an indirect, but important, effect on serotonin production. Among the different age groups selected there was no statistically significant difference with p value > 0.05 as regard IIEF

scores and vitamin B12 levels. There was also no significant correlation found between age and both vitamin B12 levels and IIEF.

CONCLUSION

Our study demonstrated that the patients with PE had lower vitamin B12 levels compared with normal men. To find a causative relationship between these entities, additional clinical and research studies are needed. It is not yet known whether this finding could be translated into a solution for PE; however, vitamin B12 supplementation for the treatment of PE merits further evaluation.

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