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Brief Report

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Estimation the Oxidative Stress State in Depression Disorders Patients

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Abstract

Depression disorders become the most health problems in the world, the present study was conducted to evaluate the oxidative stress associated with depression disorder patients, ROS and TAO were detected in study groups, The findings show that there was non-significant differences between patients and control group in age (P=0.081) and significant differences in BMI (P=0.000). also Significant elevation in ROS in patients than control at (P=0.000) and significant decreasing in TAO in patients than control group, Regarding to duration categories, there was non-significant differences in ROS (P=0.939) and TOA (P=0.879), belong to BMI the study parameters showed non-significant differences in TOA (P=0.939) And ROS (P=0.879), The correlation coefficient show strong invers association between ROS and TOA in patients (r = -0.900, p=0.000) and control (r= -0.627, P=0.000). It can be concluded strong associated between oxidative stress (ROS and TAO) and depression disease.

Keywords: Oxidative stress • ROS• TAO• Depression disorders patients

Introduction

The oxidative stress define as an increasing in free radical production with antioxidant molecules declined in the body, the free radicals have pivotal role in some cellular processing like inflammation, cellular trigger and energy production [1,2].

The free radicals included different types like ROS and RNS, both types have free electron in outer membrane able to interact with different cellular components causes harmful changes like lipids peroxidation, protein alteration and DNA damage [3,4].

Depression is one of the mental disorders that increased in a large percentage in the world in last decades; the WHO classified the depression at the 4th leading cause of disability worldwide [5].

Investigators show that the Oxidative stress associated with some disease etiology and pathogenesis [6,7]. Many psychiatric disorders have been found to be associated with ROS also the long period of oxidative stress led to other disease like diabetes mellitus, hypertension and cancer by accumulation mutations in DNA the present study aims to evaluation the oxidative stress state by detection ROS and TAO in depression disorder patients [8-10].

Methodology

Study sitting and subjects

A casecontrol study was conducted to estimate the oxidative stress state in the depression disorder patients, 20 patients were contributed in present investigation with 30 healthy individuals, patients were diagnosis as a depression disorders by specialist physician prof. Dr. Arafat H. Al-Dujaily in al-Saader teaching hospital.

Data and sample collection

All data and samples were collected according to ethical approval of ministry of environment and health in Iraq, blood samples were collected to sera isolated for TAO and ROS detection, TAO estimation by ELIZA technique and ROS detected by colorimetric method.

Data analysis

Data was represented as mean ± SE and significant was estimated at $p<0.05$ by independent T test and ANOVA one way, in addition to correlation coefficient.

Results and Discussion

The findings show that there was non-significant differences between patients and control group in age (P=0.081) and significant differences in BMI (P=0.000) also Significant elevation in ROS (108.45 ± 11.98) in patients than control (25.87 ± 1.38) at (p=0.000) and significant decreasing in TAO in patients (10.78 ± 0.50) than control group (18.00 ± 0.79) (Table 1).

Table 1. Mean differences of study parameters in patients and control group.

Subjects	Depression disorder	Control	Sig
Age	39.50 ± 3.10	33.10 ± 2.07	0.081
BMI	25.01 ± 0.86	28.06 ± 0.988	0.000
Duration	7.15 ± 1.71	0	
TAO	10.78 ± 0.50	18.00 ± 0.79	0.000
ROS	108.45 ± 11.98	25.87 ± 1.38	0.000

Regarding to duration categories, three categories were depended (<5, 5-10 and >10), according to duration period there was non-significant differences in ROS (P=0.939) and TOA (P=0.879), while significant differences observed in AGE and BMI (P=0.000) (Table 2).

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Table 2. Mean differences of study parameters in patients and control group according to duration of disease.

Duration categories	TOT	ROS	BMI	Age
1st	10.8653 ± 0.79177	109.0070 ± 18.31180	22.3500 ± 0.86439	22.3500 ± 0.86439
2ed	10.8181 ± 0.79684	112.4113 ± 19.52397	26.3750 ± 0.33368	26.3750 ± 0.33368
3ed	10.2215 ± 1.37350	89.8300 ± 33.60000	32.9000 ± 0.10000	32.9000 ± 0.10000
sig	0.939	0.879	0.000	0.000

The BMI was classified to 3 categories (normal, over and obese) Wight, study parameters showed non-significant differences in TOA (P=0.939) And ROS (P=0.879) and significant in age (P=0.000) (Table 3).

Table 2. Mean differences of study parameters in patients and control group according to duration of disease.

BMI categories	TOA	ROS	Age
Normal W	10.86 ± 0.79	109.00 ± 18.31	22.35 ± 0.864
Over W	10.81 ± 0.796	112.41 ± 19.52	26.37 ± 0.33
Obese	10.22 ± 1.37	89.83 ± 33.60	32.90 ± 0.100
sig	0.939	0.879	0.000

The correlation coefficient was studied, strong invers association between ROS and TOA in patients (r= -0.900, p=0.000) and control (r= -0.627, p=0.000) (Figure 1).

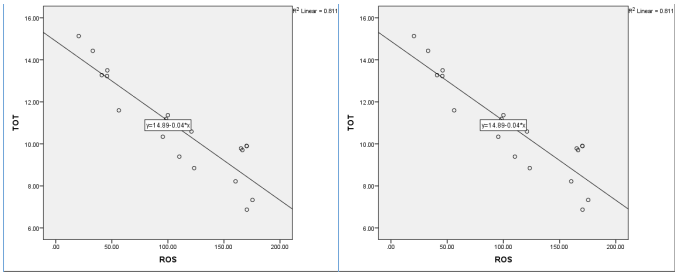

Figure 1. The correlation between TAO and ROS in patients with depression (left) and control group (right).

The present research was implemented to estimate the oxidative stress in the subjects suffered from depression, the age, BMI and duration categories were dependent in present analysis, the elevation of ROS level in present study was deal with other studies proved the main role of oxidative stress alteration in depression and other psychiatric disorders [11,12].

Regarding to the high consumption of oxygen and brain lipid-rich constitution [13,14], the oxidative stress may be the main factors of several psychiatric disorders by lipid peroxidation and protein destruction [15,16]. The lower concentration of TAO in depression that observed in present study also found in other investigations that fond low level of tryptophan, vitamin E, tyrosine, zinc, glutathione, albumin and CoQ10, in addition to decline in antioxidant enzyme activities the impaired in antioxidant mechanisms activities decreased the cell components against oxidation effect in the proteins, lipids and DNA lead to elevation in malondialdehyde, proteins functions alteration and DNA mutation [17-20]. On the other hand, other researchers found that the prolonged psychological stress may leads to increase in oxidative stress and depressive symptoms [21].

Belong to duration the TAO didn't effect by duration while ROS decreased with duration this may be by used anti-depression drugs, or special dietary system, or exercise that contributed in the decreased ROS. He relation ROS in present study lowering in the obese subjects, other study found strong positive relation between them and this didn't deal with present finding [22], different factors contributed in the ROS and obesity in complex associations [23]. The correlation between ROS and TAO appeared in strong positive relation in patients and this deal with previous studies that proved increasing ROS and decreased in TAO levels in depression patients [12]. The ROS and TAO variations in BMI and duration were non-significant because some limitations of present study as well as the low sample number because of poor health awareness in Iraqi population about psychiatric disorders which prevent the peoples to attend to the psychiatric clinic and used healthy life style. The present study concluded that ROS increased with decreased in TAO in Iraqi depression disorder patients without affected by BMI and duration of disease.

Conclusion

The correlation between ROS and TAO appeared in strong positive relation in patients and this deal with previous studies that proved increasing ROS and decreased in TAO levels in depression patients. The ROS and TAO variations in BMI and duration were non-significant because some limitations of present study as well as the low sample number because of poor health awareness in Iraqi population about psychiatric disorders which prevent the peoples to attend to the psychiatric clinic and used healthy life style. The present study concluded that ROS increased with decreased in TAO in Iraqi depression disorder patients without affected by BMI and duration of disease.

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