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Assessment of Some Salivary Biomarkers and Cortisol in Sample of Children with Attention Deficit Hyperactivity Disorder in Al-Diwaniya city

A Thesis

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Abstract

Background: Attention Deficit Hyperactivity Disorder (ADHD) is a very common problem in childhood and any one deals with children is likely to encounter it. It is multifactorial disorder which results from combination of environmental and genetic factors. If children with ADHD are identified early and appropriate interventions are made the problem is likely to be mitigated.

Aims of the study: This study is the first to assess the psychosocial, endocrine hormone stress in a sample of Iraqi primary school children experiencing attention deficit hyperactivity disorder (ADHD) compared against normal pupils, And provide further information of the role of some salivary biomarkers through following steps:-

1 – Assess the plaque and DMFT/dmft index in sample of Iraqi primary school children with ADHD.

2 – Determine the salivary flow rate and PH among ADHD children group in comparison to control group.

3 – Evaluate whether the salivary biomarkers levels are altered based on the symptoms of ADHD (total protein, peroxidase).

4 – Assessment of salivary cortisol stress hormone and alpha-amylase as for stress induced activity of sympathetic nervous system.

Materials and methods: The study sample included 85 school males pupils, with the age ranged between 8-12 years, selected from primary schools, at Al-Qadisiyah city. Revised version of Rutter Child Behavior Questionnaire has been used as a means for identification of children with ADHD and children with prosocial (control). Assess the plaque, DMFT index, PH, flow rate, serological and hormonal analysis were made to estimate total protein, peroxidase, alpha-amylase and cortisol levels in saliva of 50 ADHD pupils and 35 normal pupils as control group, using Indirect enzyme linked immunosorbent assay. The study was carried out to analysis and evaluates the

variation of salivary alpha-amylase and cortisol levels are altered as biomarkers of stress in children who have ADHD symptoms. This study was conducted during the period from the of December 2015 to April of 2016.

Results: In Oral Health Status investigation we found the level of DMFT highly significant increased (p=0.001) in ADHD pupils than in control group (1.488 vs. 1.031).Also the levels of the Plague index was highly significant increased (p=0.001) among ADHD pupils compared with control group (1.488 vs. 1.031). While the dmft level was not significant (p>0.05), in ADHD group compared with control group (1.820 vs. 1.314).

In Physiological investigation we found the level of salivary flow rate in ADHD group and controls group was no significantly difference (0.186 ml/min) in ADHD group when compared to control group (0.183 ml/min) ,at p-value (p>0.05) and the level of salivary ph was not significantly difference (6.862) in ADHD group when compared to control group (6.886), at p-value (p>0.05).

In hormonal and biochemical investigation we found the Salivary Alpha-amylase levels are highly significant increased (p=0.01) in ADHD pupils (253.364 unit\L) than in control group (136.863 unit\L). Also the levels of the Salivary peroxidase were highly significant increased (p=0.01) among ADHD pupils (0.369 unit\L) compared with control group (0.247 unit\L).as well the levels of the Salivary total protein are highly significant increased (p=0.01) in ADHD pupils (0.665 mg/L) than in control group (0.428 mg/L). While the Salivary cortisol level of ADHD pupils more high significant (p=0.01) lowered (0.901 ng /ml) than in control group (2.506 ng/ml).

The correlation between the variables in patient group found that there was negative correlation between salivary cortisol and DMFT (r= **-0.399**, P=**0.004**), in one hand, and on the other hand, there was positive correlation between salivary cortisol and dmft (r=**.306**, P=**0.031**) .Surprisingly, this result failed to show any significant correlation between others variables in patient group.

Conclusion: It was concluded; the percentage of the dental caries in ADHD among primary schools children is high in the studied schools and may be due to the changes in the levels of cortisol hormones. Due to the little information about this disorder, this study is considered as important baseline data for ADHD in Iraq.