

THESES

MAGNETIC RESONANCE SPECTROSCOPY IN ATTENTION DEFICIT HYPERACTIVITY DISORDER (ABSTRACT)*. **THESIS. NITEROI, 2005.**

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Objective: To study the applicability of proton magnetic resonance spectroscopy for the diagnosis of attention deficit/hyperactivity disorder.

Method: This case-control study assessed 46 school-aged boys through the DSM-IV symptom questionnaire and diagnostic criteria, pediatric history, physical and neurologic examinations, and a neuropsychologic test equivalent to the Wide Range Achievement Test. After 15 children were excluded and one child abandoned the study, study population consisted of 16 cases (median age 9.0 ± 1.35 years) and 14 controls (median age 9.0 ± 1.23 years). The imaging study employed a PRESS sequence with a single voxel of 8 cm^3 positioned in such a way to include mostly gray matter, echo time of 30 ms, repetition time of 1500 ms, and 128 acquisitions, and three cerebral areas were analyzed: right frontal cortex, left frontal cortex, and left striatum. Peaks and ratios of the following metabolites were computed: N-acetylaspartate, myo-inositol, choline, and creatine. Glutamate changes were also studied. In addition, rates were calculated to compare metabolite ratios among the three cerebral regions.

Results: Myo-inositol/creatine ratio in right frontal cortex was found to be significantly elevated in cases

(median 0.69, range 0.60-0.85) in comparison with controls (median 0.66, range 0.56-0.74; $p=0.044$). Peaks and ratios of other metabolites showed no significant differences. Calculated rates based on metabolite ratios among cerebral regions showed statistical significance for the comparison of N-acetylaspartate/creatine ratio in left striatum with the same ratio in left frontal cortex, and a value lower than 0.810 for this rate was associated with attention deficit/hyperactivity disorder diagnosis (*odds ratio*=9.33, 95% confidence interval=1.51-57.66, $p=0.013$).

Conclusion: A value lower than 0.810 for the rate based upon division of N-acetylaspartate/creatine ratio in left striatum by the same ratio in left frontal cortex is 9.33 times more likely to be associated with diagnosis of attention deficit/hyperactivity disorder. This rate had a 87.5% sensitivity and 57.1% specificity for ADHD diagnosis. Compared with controls, affected children also showed significant elevation of myo-inositol/creatine ratio in right frontal cortex. Study findings favor the notion of bilateral brain dysfunction in ADHD.

KEY WORDS: attention deficit disorder, hyperactivity, child, diagnosis, magnetic resonance spectroscopy.

*Utilidade da espectroscopia por ressonância magnética no diagnóstico do transtorno de déficit de atenção / hiperatividade (Resumo). Tese de Doutorado, Universidade Federal Fluminense (Área: Neurologia). Orientador: Osvaldo J. M. do Nascimento. Co-Orientador: Jairo Werner Jr.

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SOCIAL SUPPORT AS MENTAL HEALTH AND OBESITY PREVENTION. INTERVENTIONS THROUGH SCHOOL SETTINGS PLAY ACTIVITIES. (ABSTRACT)*. **THESIS. CAMPINAS, 2006.**

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Several studies indicate that within the next twenty years, half of the global population will be overweight due to the predominating growth of this disorder and the lack of effective preventive measures. The continuing growth in obesity has led to an expansion in the populations' organic problems, in addition to the psychic ones related to self-esteem and body image. Some investigators point to compulsory eating habits due to anxiety as the main cause of increased obesity. On the other hand, the absence of preventive measures in mental health has led to mental disorders, which currently

have become the main public health problem in developed nations. It has been confirmed that application of planned games or playing "activities" can reduce the risk of developing psychopathology and produce an increase in the protective factors over a short time period, this increases the possibility of the application promoting preventive results over the long term.

Two types of planned activities were chosen as a primary preventive program for this study: Art Therapy and "Capoeira" Art (a Brazilian type of self-defense). The children were divided into three groups, as follows: Art

Therapy and Physical Education; Capoeira Art and Art Education; and Physical Education and Art Education. These applications of planned games or play activities were used with 245 fourth grade children in two public schools in the city of Americana, Sao Paulo, Brazil in 2003. The study included 121 females and 124 males with ages ranging from nine to twelve years. Anthropometric measurements of height and weight were used to calculate the Body Mass Index (BMI) in order to evaluate overweight and obesity. The risk of developing psychopathology was assessed using the Achenbach Child Behavior Checklist (CBCL); the Nowicki-Strickland Locus of Control Scale for Children (NSLC); and the Susan Harter Self Perception Profile of Children (SPPC). These tests evaluated the factors of locus of control and self-esteem before and after the application of the activity. These elements are considered to be protective components in mental health.

The results obtained by application of these group activities of Physical Education and Art Education were not significant enough to reduce the risk of developing psychopathology or reducing overweight or obesity. On the other hand, the group of Art Therapy and Physical Education acted only as a form of psychotherapy, significantly decreasing the level of psychopathological symptoms (CBCL), 32% ($p < 0.05$). However, it did not significantly increase the protective mental health elements

which does not guarantee an effective prevention for this group. Nevertheless, the Capoeira Art and Art Education group achieved the objectives proposed. These students presented a significant reduction of externalization and internalization (CBCL), 58% ($p < 0.05$); as well as a significant increase in self-esteem and internal control, confirming a significant reduction in overweight or obesity (50%), ($p < 0.05$). This correlated with a significant reduction in the risk of developing psychopathology, thereby, establishing a correlation between mental health and obesity.

In this way, the game/playing activities are outstanding as a possible application for programs of primary prevention in public health. Even though an increase in resistance and a decrease in risk of developing psychopathology and obesity were obtained with the application of these game/playing activities, this is not enough to believe that these children will remain protected over the coming years or in adulthood. This fact is very important for calculating the time of application in the future preventive programs utilizing these game/playing activities. New prospective studies of longer duration are of fundamental importance for establishing the effects of these activities on the prevention of psychopathology and obesity over the long term.

KEY WORDS: child behavior, self-perception, locus of control, obesity, child, adolescent.

*Suporte social como prevenção em saúde mental e obesidade. intervenções através das atividades lúdicas no cenário escolar (Resumo). Tese de Doutorado, Universidade Estadual de Campinas (Área: Saúde da Criança e do Adolescente). Faculdade de Ciências Médicas. Orientador: Rubens Reimão.

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REPERCUSSION OF BRIEF HYPERVENTILATION MANUEVER ON THE CEREBRAL AND SYSTEMIC HEMODYNAMIC AND GASOMETRIC PARAMETERS IN MECHANICALLY VENTILATED PATIENTS (ABSTRACT)* **THESIS. ARACAJU, 2006.**

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Measurements of respiratory mechanics, very important to conduct the patient with mechanical ventilation, are obtained with the relaxation of respiratory muscle in sedated or paralyzed patients or through a brief period of hyperventilation (HV), which is possible to decrease the drive ventilation of patient. However, it is known that the hyperventilation decreases the carbon dioxide arterial pressure (PaCO_2) and can induce changes in the cerebral blood flow.

This study proposes to verify the effects of this brief period of HV on the gasometric parameters, cerebral and systemic hemodynamic in 15 mechanically ventilated patients, with ventilation drive and different pathologies, except cerebral pathology, admitted in Intensive

Care Unit of Vita Hospital in Curitiba-PR, being 12 males (80%) and three females (20%), mean age 61.29 (± 18.97), eight clinical and seven surgical diagnosis.

The protocol consisted of a brief HV with increase by 50% from previous minute volume of patient for two minutes. The variables were recorded before, on the first minute of HV (HV1), on the second minute (HV2) and five minutes after the end of maneuver. The parameters recorded were mean blood flow velocity and pulsatility index through transcranial Doppler of the middle cerebral arteries, blood gas parameters (pH, PaCO_2 , EtCO_2 , HCO_3^- , BE, PaO_2 , SatO_2 e SpO_2), besides heart rate and mean arterial pressure. The data were averaged statistically by ANOVA, Newman-Keuls and Wilcoxon tests.