"Correlative Study of Uninhibited Primitive Reflexes in Adult ADD/ADHD"

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Abstract

This study was performed to determine if there is a correlation between uninhibited primitive reflexes and ADD/ADHD in the adult population. Primitive reflexes should not be present beyond the first year of life; if present, they could indicate a central nervous system dysfunction, with one possibility being adult ADD/ADHD. (3) The study relied on reflex testing and an ADD / ADHD questionnaire to determine if a proposed correlation exists within a healthy group of adult volunteers. The results of the study determined there was little clinical significance in uninhibited primitive reflexes and ADD/ADHD.

Key word search: ADD, ADHD, primitive, reflexes, uninhibited, behavioral

Introduction

Primitive reflexes begin in utero and are inhibited within the first year of life. When these reflexes are not systematically inhibited, developmentally aberrant responses manifest, such as learning disabilities, poor balance and coordination, mal-developed cross crawl patterns, poor handwriting, bedwetting, fidgeting and poor concentration. Primitive reflexes begin in utero and are inhibited within the first year of life. This study looks at an adult population of students ages 18-40 to see if certain primitive reflexes can be elicited clinically, and if the subject has experienced symptoms associated with ADD/ADHD.

Though the Institute of Neuro-Physiological Psychology is currently producing research on not only finding the aberrant reflexes, but using auditory, vestibular and motor retraining to inhibit the reflexes in school aged children, we could find no research on an adult population. This important study is a preliminary step in investigating the possibility of aberrant reflexes in an adult population; if found, then future research investigating the use of neurophysiologic retraining in an adult population is possible. The general purpose of this study is to show an agreement between primitive reflexes in an adult population and Attention Deficit Disorder or Attention Deficit Hyperactivity Disorder (ADD/ADHD).

Primitive reflexes begin in utero and are designed to help the fetus out of the birth canal and into their new environment. An examination of the primitive reflexes can assess maturation of the infant's nervous system. Primitive reflexes, also known as infantile automatisms, are sub-cortical motor responses that can be elicited at birth and generally are suppressed during the first few months of life. (2)

Primitive reflexes retained beyond six months of age may result in immature patterns of behavior or may cause immature systems to remain prevalent, despite the acquisition of later skills. (3) If primitive reflexes remain active beyond twelve months of life, they are aberrant, and they are evidence of a structural weakness or immaturity within the central nervous system (CNS). As stated above, patterns of immature behavior are also found in children with ADD/ADHD.

Attention Deficit Hyperactivity Disorder / Attention Deficit Disorder (ADHD/ADD) is the single most frequent idiopathic behavioral disorder in pre-adolescent children. The most frequently cited primary or core symptoms include developmentally inappropriate degrees of inattention, cognitive disorganization, distractibility, impulsivity, and hyperactivity. (5)

The most significant primitive reflexes that are consistent with ADHD/ADD patients are the Moro reflex, Spinal Galant reflex, Palmar Grasp reflex and Asymmetric Tonic Neck reflex. The Moro reflex is present from the ninth week in utero and is normally inhibited by the fourth month of life. The Moro reflex is the only primitive reflex that is congruent with each of the sensory systems. The Moro reflex response is a result of a startling stimulus to the auditory, vestibular, visual, or tactile systems. According to Sally Goodard, the Moro reflex "consists of a sudden symmetrical movement of the arms upward - away from the body - with opening of the hands, momentary freeze and then a gradual return of the arms across the body into a clasping posture. Abduction is accompanied by an inhalation. Adduction facilitates the release of that breath." The Moro reflex is a survival mechanism which serves to alert and summon assistance; if it is not inhibited it will keep the infant in a heightened state of vigilance

and increase stress hormones such as adrenaline and cortisol (3). This can lead to a fearful child who has difficulty socializing or who is over-active, highly excitable and/or aggressive. In addition, if the reflex isn't inhibited as the child develops; peripheral stimulation could ultimately cause disturbances in the maintenance of visual attention, auditory confusion, vestibular imbalance, physical timidity, or promote psychological symptoms.

In 1917, Galant found that "When the dorsal skin near and along the vertebral column is stroked, the infant forms an arch with his body; the concavity of the arch is directed toward the stimulated area, and by arching in the opposite direction the infant evades stimulus," a response he named the Spinal Galant reflex. Emerging within the twentieth week in utero, the Spinal Galant reflex is positive at birth and inhibited by the ninth month of life. In 1917, however, Veraguth found this reflex to be present in some ill adults. Spinal Galant reflex has been found in children with poor bladder control and is present in a large percentage of adults with irritable bowel syndrome (3). Symptoms of the retained Spinal Galant reflex are fidgeting, bedwetting, poor concentration, poor short term memory, and hip rotation to one side when walking.

The Asymmetrical Tonic Neck reflex is developed by the eighteenth week in utero and provides continuous motion which stimulates proper neural connections. This is elicited by movement of the head to one side, which causes extension of the ipsilateral arm and leg. Simultaneously, the contralateral limbs exhibit flexion. During the birth process, the Asymmetric Tonic Neck reflex is vital, but it should be inhibited by the sixth month. The Asymmetric Tonic Neck reflex is the first eye-hand coordination to take place. Once inhibited, higher cortical functions can develop. Consequently, if this reflex

remains after six months of life, bilateral brain involvement occurs, resulting in unnecessary confusion to the individual. This ambiguity ultimately causes difficulty in crawling, walking, and developing a dominant side of the body, and in later stages can lead to difficulty writing, reading, and poor ocular movements.

Methods and Materials

Subjects

The design of the research was a case-controlled retrospective study. All twenty eight participants were volunteers from Logan College of Chiropractic between the ages of 18-40. Exclusions for participation included that the subjects must be without restricted range of motion induced by serious trauma. There were no subjects under the influence of any central nervous system depressants such as over the counter medication, prescribed medication, or alcohol.

All participants signed an informed consent prior to examination which explained the minimal risks involved with this particular research project.(*Appendix B*) Risks included the possibility of the subject feeling light headedness from the quick change in head position during the Moro reflex elicitation.

Procedures

Subjects participating in this research were required to complete an individual ADHD/ADD questionnaire (*Appendix* A) and were also tested for primitive reflexes which included Moro, Palmar Grasp, Spinal Galant, and Asymmetric Tonic Neck reflexes. The subject's assessments were conducted by blinded testers. Student doctors were trained in eliciting the Moro, Palmar Grasp, Spinal Galant, and Asymmetric Tonic Neck Reflexes. The training was a combination of hands-on experience with Logan College of Chiropractic staff, associated readings, and video recordings on how to elicit primitive reflexes. Advisors were trained in both research and data analysis.

A subject questionnaire was given prior to examination. The questionnaire utilized was the DSM-IV diagnostic criteria for ADHD/ADD. A possible diagnosis of ADHD/ADD was determined if the subject answered true to seven or more of the questions related to their present state.

The Moro reflex was obtained by having the subject lie on a flat adjusting table with their head cupped in the testers hands and elevated two inches above the level of the subjects' spine. The subjects' arms were flexed at their side on the table. After just a few moments the tester allowed the subjects head to drop two to three inches just below the level of the spine, with the testers hands there for support at all times. Instructions were given to the subject, "when you feel your head drop you must clasp your hands together across your chest as quickly as you can." An elicitation of the Moro reflex was noted as a delay in the subjects' response time of clasping their arms.

The Palmer Grasp reflex was performed with the subject standing, feet together with arms bent and palms upturned in a flexed position, and elbows away from their body. With a small paint brush the palm was stroked along the creases. An elicitation of the Palmar Grasp reflex was noted as a slight closure of the hand.

The Asymmetric Tonic Neck reflex was performed with the patient standing, feet together, arms held straight out at shoulder level, but with hands and wrists relaxed. The tester stood behind the subject and the following instructions were given to the subject, "when I turn your head, I want you to keep your arms straight out in front of you." An elicitation of the Asymmetric Tonic Neck reflex was noted as any deviation of the subjects' arms.

The Spinal Galant reflex was performed with the patient gowned and in a

quadruped position on a flat table. The tester used a soft brush and stroked down the subjects' back beginning at the medial shoulder blade extending to the base of the lumbar region at a distance of ½ inch from the spine, bilaterally. An elicitation of the Spinal Galant reflex was noted as any movement towards the side of stroke.

The confidentiality of the research data was maintained throughout the experiment by utilizing a number system. Each subject received a number prior to the beginning of the procedures with both the questionnaire and reflex testing corresponding to that number. This procedure was to ensure that the testing was blind.

Statistical Tests

Four groups were expected to form following the testing for both ADHD/ADD through a questionnaire and primitive reflexes. These four groups included, both positive reflex and ADHD/ADD questionnaire, both negative reflex and questionnaire, a positive reflex and negative questionnaire, and negative reflex and positive questionnaire. From the results of the four groups, kappa testing determined the statistical concordance.

Results

Upon compilation of the research results, one of the four tested reflexes was more applicable to the kappa testing, so for this data, the reflex utilized for the statistical analysis was the Asymmetric Tonic Neck Reflex. Of the possible four groups, one subject had both a positive questionnaire and positive reflex test, twelve subjects had both a negative questionnaire and a negative reflex test, eleven subjects had a positive reflex test and a negative questionnaire, and four subjects had a negative reflex test and a positive questionnaire. With these results, kappa testing determined statistical significance. The kappa value was 0.1798, which indicates little concordance of the testing parameters.

The following table represents the results as noted in the above paragraph.
R=Reflex, Q=Questionnaire

+ R +Q	+ R - Q
1	11
- R +Q	- R -Q
4	12

Kappa value= 0.1798

The following table represents the testing results per each subject:

Subjects	Reflex	Questionnaire
1	+	-
2	-	-
3	-	-
4	+	-
5	+	+
6	-	-
7	-	-
8	-	-
9	+	-
10	+	-
11	+	-
12	-	-
13	-	-
14	-	-
15	+	-
16	-	-
17	-	-
18	+	-
19	-	-
20	+	-
21	+	-
22	-	-
23	-	+
24	-	-
25	-	+
26	-	-
27	+	-
28	-	-
29	+	-
30	-	+

Discussion and Conclusion

This study focused on an adult population of students ages 18-40 to determine if significant primitive reflexes could be elicited clinically, and if the subject had experienced symptoms associated with ADD/ADHD. The principle findings of this research study indicated little clinical significance. However, primitive reflexes were elicited in some adults, even though these reflexes should have been inhibited within the first year of life. Continued research is definitely needed in the area of primitive reflexes in the adult population and their relationship to ADHD/ADD. A more controlled study utilizing a population of previously diagnosed ADHD/ADD subjects could correlate a higher statistical concordance. Future research investigating the use of neurophysiologic retraining in an adult population is a possibility once the appropriate clinical significance is validated.

APPENDIX A

Please circle the number/ numbers of the questions that are TRUE for you:

1. Is there any history of learning difficulties in your immediate family?

2. Were there any medical problems during the birth?

3. Was the birth process unusual or prolonged in any way?

4. Were you a child born early or late for term (more than 2 weeks early or more than 10 days late)?

5. Was your birth weight below 5 lbs (pounds)?

6. Did you have any difficulty feeding in the first weeks of life, or in keeping food down?

7. Were you extremely demanding in the first 6 months of life?

8. Did you miss out on the 'motor stage' of crawling on your tummy and creeping on hands and knees?

9. Were you late at learning to walk (16 months or later would be considered late)?

10. Were you late at learning to talk (2-3 word phrases at 18 months or later would be considered late)?

11. Did you have difficulty in, for example, learning to dress yourself, do up buttons or tie shoelaces beyond the age of 6-7 years?

12. Do you suffer from allergies?

13. Did you have an adverse reaction to any vaccinations?

14. Did you suck your thumb beyond the age of 5 years?

15. Did you continue to wet the bed, albeit occasionally, above the age of 5 years?

16. Do you suffer from travel sickness?

17. Did you find it very difficult to learn to tell the time from a traditional (as opposed to digital) clock?

18. Did you have an unusual degree of difficulty learning to ride a bicycle?

19. Did you suffer from frequent ear, nose, throat or chest infections?

20. In the first 3 years of life, did you suffer from any illnesses involving extremely high temperature, delirium or convulsion?

21. Did you have difficulty catching a ball, and stand out as 'awkward' in PE classes?

22. Do you have difficulty sitting still for even a short period of time?

23. If there is a sudden unexpected noise, do you over-react?

24. Do you have reading difficulties?

25. Do you have writing difficulties?

APPENDIX B

Consent Form

I _____, understand that I will be participating in a research project that should last thirty minutes or less. I will be required to fill out a questionnaire and allow my reflexes to be tested.

I understand there are minimal risks involved. **During reflex testing there may be a very slight chance of the subjects head contacting the floor (Moro reflex) or skin irritation (Spinal Galant reflex).**

I understand that I may be informed of my current health status.

I understand that none of my identifying information will be disclosed.

I understand that if I have any questions regarding this research or about my rights as a subject involved, I may contact, Dr. Gutweiler, IRB Chairperson, Logan College of Chiropractic at (636) 227-2100 Ext. 1910.

I understand that my participation is voluntary and I may discontinue participation at my choosing.

_____

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