

Autism and Alzheimer; The Etiopathologic Twins

Abdullah M. Nasrat^{1,*}, Randa M. Nasrat², Mohammad M. Nasrat²

¹General Surgeon, Zytona Center, Medina, KSA

²Department of Internal Medicine, Helwan General Hospital, Helwan, Egypt

Abstract This short review aims at demonstration of the aspects of similarity in etiology and pathology between autism and Alzheimer. An etio-pathologic similarity exists between autism and Alzheimer's disease; both disorders include obscure etiology and indefinite cure. The toxic influence of abnormal profuse amounts of *Helicobacter pylori*-produced colonic ammonia and the elevated serum ammonia level are constant in both disorders. *H. pylori*, ammonia and nitric oxide constitute a cure and a poison at the same time in both diseases. Colon care/colon clear could be a good clinical measure to avoid development of autism among disadvantaged kids and to delay onset of Alzheimer in susceptible elderly people. It could be considered that autism is the Alzheimer's of kids and Alzheimer is the autism of elderly people.

Keywords Alzheimer, Ammonia, Autism, Helicobacter pylori, Nitric oxide, Senna

1. Introduction

Autism is a brain disorder that limits a person's ability to communicate, correlate and relate to other people. It is a series of neuro-developmental disorders that are characterized by deficits in both social and cognitive functions [1]. It first appears in young children who fall along a spectrum from mild to severe presentation. Autism spectrum disorders (ASD) affect about one child in 68, striking nearly five times as many boys as girls [2, 3]. While Alzheimer disease (AD) is a chronic, progressive and prevalent neuro-degenerative disease characterized by loss of higher cognitive functions with an associated memory loss. Alzheimer is the most common age-related degenerative disease [4, 5].

It was concluded that genetic and environmental factors could be both responsible for the etiology of ASD. Although epidemiological studies have been conducted to clarify these factors but this conclusion remains unclear [6, 7]. Rather similarly, a lot is not well known about Alzheimer's; more than 100 years after its discovery it is still not exactly known what causes this neuro-degenerative disease and an exact cure is still not known [4, 5].

A child with autism remains detached showing loss of the already developed language skills while AD is associated with memory loss [4, 5, 8, 9]. Children with more autistic disorder showed widespread areas of decreased gyration of the brain [10, 11]. White matter impairment, dysplasia with abnormal cortical thinning or decreased cortical thickness have been identified among children with autism

[12-15]. Investigator considered that the increased prevalence of identified cases of autism among U.S. children need to be regarded as an urgent public health concern [6]. While on the other way round, AD was first described in a female patient who experienced memory loss, paranoia and psychological changes. Autopsy revealed shrinkage in and around nerve cells in her brain. Cognitive measurement scales allowed to investigate the degree of impairment and estimate the volume of the damaged brain tissue. A National Alzheimer's Disease Genetic Study started in 2003 to hopefully identify risk genes for the disease. In 2010, Alzheimer's was considered the sixth leading cause of death in the United States [4, 5].

The healthy effect of residual ammonia in the gut that is remaining after the protective biological functions of *Helicobacter pylori*-produced ammonia close to the gut mucosa which is also sharing to maintain a constant systemic serum ammonia level has been emphasized as concerns the integrity of the micro-capillary circulation among all ages including children and elderly people via ensuring the endothelial-derived nitric oxide (NO) liberation according to the effect of shear stress [16, 17]. Migration of *H. pylori* to the colon under the influence of antibiotics will lead to continuous production of ammonia for a reason or no reason, un-opposed or buffered by any acidity, leading to accumulation of profuse toxic amounts of ammonia and NO toxicity in turn that could lead to adverse toxic effects in the body [17-19]; The healthy value of residual ammonia will turn accordingly into a toxin and the cure becomes a poison.

The symphony of cure and poison played by the bacterium *H. pylori*, ammonia of *H. pylori* and NO of micro-capillary endothelium is being clearly manifested in both autism and Alzheimer; when it deviates towards the toxic poison side because of the antibiotic violence it is standing most probably behind the permanent compromise of some areas of

* Corresponding author:

abdullahnasrat@hotmail.com (Abdullah M. Nasrat)

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the brain leading to cognitive dysfunction, loss of already developed skills or memory loss [18, 19].

2. Review

The similarity in etiology and pathogenesis between autism and Alzheimer disease seems rather evidently obvious. Autism is a neuro-developmental disorder with unknown etiology and treatment is obscure until recently. Similarly, Alzheimer disease is a neuro-degenerative disorder with indefinite etiology and all efforts of treatment are only successful in attempting to postpone or delay the symptoms and onset of the disease [1-7, 20, 21]. Autism is characterized by deficits in social and cognitive functions associated with loss of already developed skills while AD is a progressive disease characterized by cognitive disorders associated with memory loss [4, 5].

The toxic influence of colonic ammonia produced by the abnormal existence/behavior of colonic *H. pylori* strains is the most reasonable pathogenesis behind both autism and Alzheimer as serum ammonia level was found elevated among patients of both disorders to the extent that preservation of the natural structure and existence of *H. pylori* was suggested as a good preventive measure towards development of autism and colon clear was found an effective measure to delay the symptoms and onset of Alzheimer if employed at the proper timing [16, 17]. The amyloid theory in Alzheimer's disease is greatly accepted but the toxic influence of ammonia in the amyloid disorder is still greatly valid [22].

Both disorders, ASD and AD, remained for long time without a definite etiology but the ammonia hypothesis is adequately accepted. Autism once established is not a curable disorder or is not a disease of definitive cure due to permanent compromise of the centers of the brain responsible for development of skills but it is a typical disease of definite prevention via natural elimination of the abnormal colonic *H. pylori* stains for the mother and the kid particularly at the critical time of child weaning (18-24 month of age) and the strict sanitary measures during serving food to the kid. Prevention is always far better than treatment; accordingly, the challenge of autism could be greatly controlled. Alzheimer in the same way once established is difficult to cure or improve but so long colon clear employing natural measures namely the senna leaves extract purge was found an effective method to postpone or delay the symptoms and onset of the disease particularly if employed at the early critical timing of development of symptoms; accordingly the disease could be readily controlled or prevented by watching the colonic condition and supporting the structure of natural microbiota [16, 17, 19]. Hence, the symptoms of Alzheimer and dementia should not be considered un-avoidable so long an effective measure to delay the onset and symptoms is becoming available that could in such way render the disease possibly prevented or at least readily controlled.

The concept of cure and poison of *H. pylori*, residual *H. pylori*-produced ammonia close to the gut mucosa and the endothelial-derived NO liberation induced via the effect of shear stress caused by systemic ammonia is perfectly applicable in both disorders; *H. pylori*, ammonia and NO within natural limits constitute cure and protection while beyond natural parameters become poisonous and toxic [16, 17].

3. Summary

In Summary, the etiopathologic similarity in autism and Alzheimer includes the following characteristics:

1. Both disorders were leading sufficient time with obscure etiology and indefinite cure.
2. Residual levels of ammonia could be healthy towards both conditions.
3. The toxic influence of ammonia and its elevated serum level are constant findings in both disorders.
4. The influence of the abnormal-behavior/existence colonic *H. pylori* strains is valid in both disorders and is mostly due to antibiotic abuse.
5. Both disorders when established could have no chance of cure.
6. Both disorders could be typically preventable via employing colon care and colon clear at proper timing.

Twin similarity between autism and Alzheimer disease does not mean that it is an identical twin similarity as there should be essential differences between them. Autism as example is more prevalent in boys than girls while Alzheimer is more frequent in females than males. According to observational findings that autism could be *H. pylori*-related, it was found in some studies that *H. pylori* in children prevails significantly among boys more than girls which could contribute for explanation of the frequency of autism among boys [23-25]. On the other way, the rate of Alzheimer disease is more in females as elderly females dissociate from the society earlier than males who could maintain a degree of association and socialization for an older age than females, this could constitute a sort of cognitive rehabilitation which could contribute for explanation of the frequency of Alzheimer in females more than males.

Furthermore, autistic disorder could have a fast onset to develop while Alzheimer could take some years to establish; autism is a neuro-developmental disorder occupying the critical timing of development of centers responsible for skills during early childhood [16], toxins could compromise these developing centers in a short duration and hence affecting their development faster. While Alzheimer is a neuro-degenerative disease affecting already developed brain centers among adults [17], degeneration of these centers is a slower process needing therefore some years to establish.

4. Conclusions

The twin similarity between autism and Alzheimer in etiology and pathology is clearly obvious; both of them are of indefinite etiology and cure. Both disorders are ideal examples for the concept of cure when it turns a poison to be applied for them; namely *H. pylori*, ammonia and NO. It might be accordingly considered that autism is the Alzheimer's of kids and Alzheimer is the autism of elderly people.

AIM

The aim of this mini review is demonstration of the aspects of similarity in both etiology and pathology between autistic disorder and Alzheimer's disease.

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