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REVIEW ARTICLE

ALZHEIMER AND PARKINSON: HOW THOSE NEUROPATHOLOGY'S CAN COMMIT THE MASTICATION AND DEGLUTITION - A LITERATURE REVIEW

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ABSTRACT

Aim: To presume how Alzheimer's and Parkinson's neuropathies may compromise chewing and swallowing mechanisms in individuals with these diseases.
Methodology: Used the following main health databases: PUBMED, ScIELO, Google Scholar; There is period from 1959 to 2017. Alzheimer's Disease, Parkinson's Disease, Mastication, Swallowing (Swallowing). We selected 27 articles that fit the following inclusion criteria: Systematic reviews, literature review, clinical case, articles available as variables under study.
Results: It has been observed that both Alzheimer's disease and Parkinson's disease has increased considerably in the community due to elevated life expectancy, since it affects the masticatory and swallowing muscles making them as well as compromised, and there is a dysfunction of the system Of cholinergic receptors present in the central nervous system, accumulating proteins and leading to neuronal death.
Conclusion: Neurodegenerative diseases are both aggressive and progressive, thus attacking the muscles and causing weakness, as well as impairment of masticatory, motor, behavioral, learning, and other functions.

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INTRODUCTION

Chewing and swallowing are motor-sensory mechanisms activated and regulated by numerous systems and neural circuits, coming from the cortex as well as by ganglia of the base, cerebellum, nuclei of cranial nerves (Costa, 2006). One of the chemical mediators of the central nervous system, present in the neuromuscular junction is Acetylcholine, its synthesis being one of the determining factors for informative neurotransmission. This in turn is sent by the brain through afferent pathways, reach up to specialized muscles in performing chewing as well as swallowing of food (Holloway, 2007).

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Alzheimer's disease and Parkinson's disease, as well as others such as polymyositis, dermatomyositis, dystrophyoiotonic, oculopharyngeal dystrophy (autosomal dominant inheritance), myasthenia gravis (autoimmune disease), amyotrophic lateral sclerosis (ALS: chromosomal mutation), among others (Tavares, 2012). When it comes to the stomatognathic system, it is well known that it is perfectly organized so that the mastication is performed adequately and satisfactorily, counting on specialized muscles for this function, promoting movements of elevation, depression, protrusion and retrusion of the mandible with sufficient force to crush the food, but also prevents food from entering the nasal cavity and invading the airways, as well as promoting a correct occlusion (Rosso, 2008). Chewing and swallowing are motor-sensory mechanisms activated and regulated by users of neural systems and circuits from the cortex, as well as by ganglia of the base,

cerebellum and nuclei of cranial nerves. It is a physiological mechanism that has as main function to crush the food, turning it into smaller ones so that, when mixed with a saliva, there is an easy swallowing; fully mechanical movement performed by smooth muscles through involuntary movements (Bigal, 2007). Because chewing is controlled by the brain, more precisely by the cerebellum (motor part), and by the cranial nerves, diseases that attack the nervous system and destroy neurons and nervous ganglia cause muscle weakness, dysphagia, difficulty swallowing, among others. The major neurodegenerative diseases that affect chewing and swallowing are Alzheimer's and Parkinson's disease, which usually affect the elderly from the age of 60 (Siebra, 2016). This work aims to show how the neuropathologies: Alzheimer and Parkinson can compromise masticatory mechanisms and swallowing in individuals with these conditions.

MATERIALS AND METHODS

This study used the following main health database: PUBMED (www.pubmed.gov); ScIELO (www.scielo.org), Google Scholar (www.scholar.google.com.br) from 1959 to 2017 (TABLE.1, FIGURE.1 and GRAPH.1). With the following descriptors: Alzheimer's Disease, Parkinson's Disease, Mastication, Deglutition. We selected 27 articles that fit the following inclusion criteria: Laboratory studies, systematic reviews, literature review, clinical case, articles that address the variables under study.

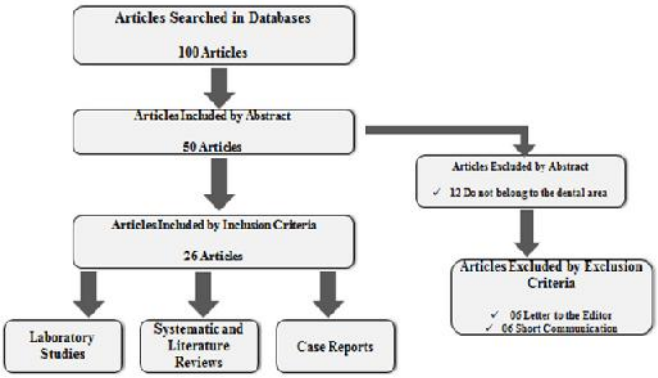
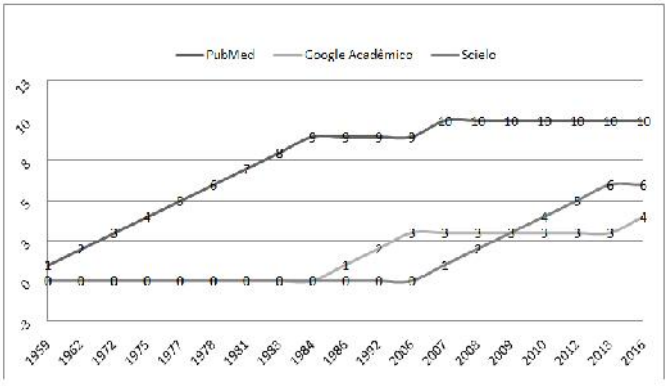


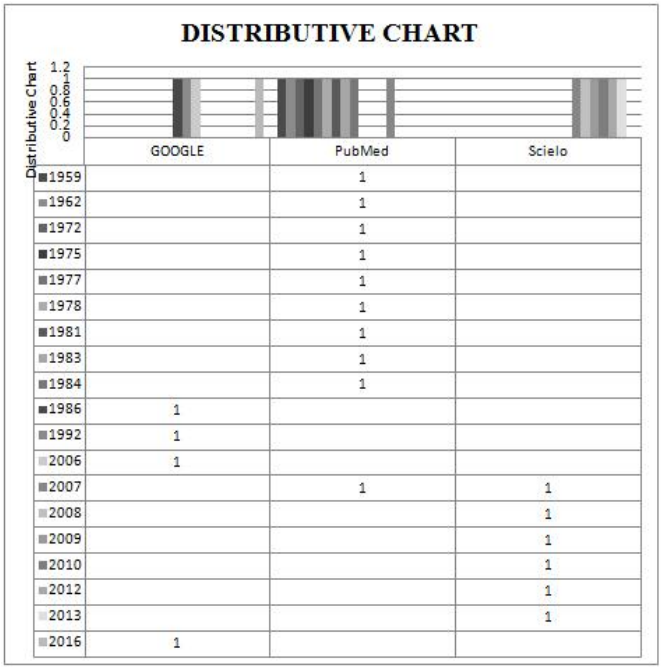
Figure 1. Flowchart of the criterion of inclusion of articles



Graph 1. Number of articles in relation to years of publication

RESULTS

It has been shown that both Alzheimer's disease and Parkinson's disease have increased considerably in this contemporaneity due to elevated life expectancy, since it affects the masticatory and swallowing muscles causing them to be compromised, and there is a dysfunction of the Cholinergic receptors present in the central nervous system, accumulating proteins and leading to neuronal death.



	GOOGLE	PubMed	Scielo
1959		1	
1962		1	
1972		1	
1975		1	
1977		1	
1978		1	
1981		1	
1983		1	
1984		1	
1986	1		
1992	1		
2006	1		
2007		1	1
2008			1
2009			1
2010			1
2012			1
2013			1
2016	1		

Table 1. Distributive and total graph per year

One of the most important chemical mediators of the central nervous system, the neuromuscular junction among other activities, is an acetylcholine, its synthesis being one of the factors for cholinergic neurotransmission, once affected, there will be slow chewing and swallowing functions. In this way, it is observed in Parkinson's disease an attack occurs to the dopaminergic receptor system, which in turn is related to a dopamine. The neurochemical changes in the memory-related dopaminergic system, a motor and cognitive function, such as learning and social interaction, humor was present in the patients with this disease. Comparing the impacts of Alzheimer's disease and Parkinson's disease on mastication and swallowing, it is well known that Alzheimer's has a greater influence on chewing because of its slow effects and weakness of the muscle fibers that make up the masticatory muscles. Parkinson's disease, on the other hand, further compromises swallowing of the pharyngeal and dorsal musculature, reducing its movement and compromising the formation and control of the food bolus, as well as swallowing, causing dysphagia. Both have a common condition in the affected individuals: malnutrition and dehydration, due to the great difficulty of feeding.

DISCUSSION

Aging, along with other associated risk factors, contributes to the development of dementia and the development of neurodegenerative diseases (Coelho, 2009). About 35.6 million people worldwide have Alzheimer's disease (AD), according to the largest Alzheimer's Disease International (ADI) survey ever conducted today. It is predicted that the number of people with Alzheimer's will reach 65.7 million in 2030 and 115.4 million in 2050. Currently, 58% of the population with

Alzheimer's are in developed countries; Which will reach 72% in 2050 (Sanches, 2003).

Alzheimer

Alzheimer's is a progressive neurodegenerative disease that causes memory loss and that makes the individual carrier totally dependent and unable to perform normal functions like eating alone, for example. Individuals with this condition develop nutritional problems, as they have complications to feed, due to a marked difficulty in chewing, swallowing and assimilation of food. The carriers of this disease develop slowness in their chewing movements and poorly coordinated or uncoordinated, may lose control of the food bolus and, added to the difficulty in swallowing, can get to choke (Sanvito, 1986). The difficulty in swallowing followed by malnutrition, dehydration and aspiration are classic signs that characterize dysphagia being a disorder that can compromise one of the phases of swallowing, which is constituted by rapid and integrated movements, dividing in oral, pharyngeal and esophagogastric phase, moment In which food is prepared and passed from the esophagus to the stomach, interfering with the nutritional status of the individual with Alzheimer's disease, culminating in a fairly common sequela (Werneck, 2010).

This neuropathology, in the last decades, has increased considerably with an expectation of life. It is known that such a disease is characterized by the loss of synapses and death of the neurons, affecting the cerebral cortex, the hippocampus, and the entorhinal cortex, etc .; Areas responsible for cognitive coordination. Based on the histopathological assumption related to the neuronal part of the patients with the disease, it is noted that there is a dysfunction of the cholinergic receptor system present not central nervous system, accumulating proteins and leading to neuronal death (Ventura, 2010). One of the most important chemical mediators of the central nervous system, the neuromuscular junction among other activities, is an acetylcholine, the synthesis being one of the factors for cholinergic neurotransmission (Scott, 1992). Neurochemical changes in the memory-related cholinergic system, motor function and cognition such as learning and social interaction have been shown to be present in Alzheimer's patients. It is perceived that weakness in muscarinic cholinergic receptors are related to memory loss, cognitive and motor functions, together with nicotinic cholinergic receptors that stimulate an excitatory response (Maranhão-Filho, 2013). However, recent studies in encephalic images of patients with the disease show that nicotinic receptors are more sophisticated, taking into account that the drugs for muscarinic receptors are not specific as drugs for nicotinic receptors (Folstein, 1975; Hachinski, 1975 and Lezak, 1983). Thus with a loss of memory, the Alzheimer's patient may forget to be food, in addition to their masticatory functions compromised by the weakness of the cholinergic system. Other studies suggest that a decrease in the afferent chewing stimulus may decrease a number of neurons and memory loss as to the chewing of soft foods, which would not stimulate the gingival mucosa as much as consistent foods would do, and therefore disease From Alzheimer (Moss, 1984; Peterson, 1972).

Parkinson

It is a disease that manifests itself preferably in the elderly of 60 years or more. Characterized by causing tremors, it is caused by degeneration of the black substance of the midbrain, and genetic predisposition, which can be triggered by environmental factors in which generates gradual loss of neurons (Peterson, 1972).

Parkinson's disease, as well as an Alzheimer's disease, has increased considerably in the contemporary world, due to an increase in life expectancy. This neuropathology is characterized by degeneration of the black substance of the midbrain in the compact portion, leading to a weakness in the production of dopamine, being a neuromodulator and transmitter of the central nervous system as well as percussor of norepinephrine and epinephrine (Kaplan, 1978). Based on the histopathological assumption related to the neuronal part of Parkinson's disease patients, there is a dysfunction of the dopaminergic receptor system present in the central nervous system, accumulating proteins that form the Lewy corpuscles and leading to the death of neurons, thus weakening OGnigrostriatal system, which regulates the motor part (Goodglass, 1972). Dopamine is one of the most important chemical mediators of the central nervous system, being in the synthesis a precursor of noradrenaline, but also participates in adrenergic neurotransmission stimulating adrenergic receptors (Kertesz, 1979). Like Alzheimer's disease, Parkinson's disease also affects the chewing muscles and pharynx causing mainly dysphagia. Almost half of the patients with Parkinson's disease develop changes in the swallowing process. Patients with the disease also have a reduction in the movement of tongue elevation, uncontrolled food bolus with drop in the region of the pharynx without the stimulation of the movement of swallowing (DeRenzi, 1978 and DeRenzi, 1978). In addition, these patients are more in addition to a reduction of the movement of the tongue elevation, there is a lack of control of the food bolus, having fallen from the same region of the pharynx causing choking. In some patients, the disease is already at a stage where it sequesters fluid gasketting, as there is a slow and reduced movement of the larynx, facilitating the entry of fluid into the airways (Wechsler, 1981 and Benton, 1977).

Conclusion

It can be concluded from this study that: In addition, these patients are in addition to a reduction of the movement of the tongue elevation, there is a lack of control of the food bolus, having fallen from the same region of the pharynx causing choking. In some patients, the disease is already at a stage where it sequesters fluid gasketting, as there is a slow and reduced movement of the larynx, facilitating the entry of fluid into the airways.

Conflict of Interests: The authors declare they do not have any conflict of interests.

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