Alzheimer's Disease

Alzheimer's is a progressive neurological disease of the brain leading to the irreversible loss of neurons and the loss of intellectual abilities, including memory and reasoning. As the disease progresses, it can become severe enough to impede social or occupational functioning. Alzheimer's disease is also known as simply Alzheimer's, or Senile Dementia of the Alzheimer Type (SDAT).

Scientists believe that for most people, Alzheimer's disease results from a combination of genetic, lifestyle, and environmental factors that affect the brain over time. As more and more brain cells die, Alzheimer's leads to significant brain shrinkage.

Common symptoms of Alzheimer's Disease:

- Confusion
- Disturbances in short-term memory
- Problems with attention and spatial orientation
- Changes in personality
- Language difficulties and unexplained mood swings

Although these symptoms will likely overlap and fluctuate, varying in severity and chronology, the overall progress of the disease is fairly predictable. On average, people live for 8 to 10 years after diagnosis, though this terminal disease can last up to 20 years.

How is Alzheimer's related to your mouth and oral microbiome?

Studies have yet to yield conclusive results, but research suggests that exposure to inflammation early in life quadruples one's risk of developing Alzheimer's disease.

An inflammatory burden early in life, as represented by chronic periodontal disease, might have severe consequences later on as a contributing factor to Alzheimer's. If the link between inflammation and periodontal disease is confirmed, researchers say it would add an inflammatory burden to the short list of preventable risk factors for Alzheimer's disease.

www.medicalnewstoday.com

www.mayoclinic.com/health/alzheimers-disease

www.ahaf.org/alzheimers

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Chronic Periodontitis and Alzheimer's Disease

The overlapping causes between sporadic Alzheimer's Disease and chronic periodontitis include advancing age, and loss of up to nine teeth, are the leading risk factors for developing late-onset Alzheimer's related chronic periodontitis. A study concluded that patients with chronic periodontitis or gingivitis had an increased risk of developing dementia over ten years.

Another study showed that a ten-year exposure to chronic periodontitis doubles the risk of developing Alzheimer's Disease. This study establishes the base for premature tooth loss leading to Alzheimer's Disease. A retrospective study also suggested that two specific oral bacteria were linked to the cognitive deficit after a period of ten years.(1)

All of these studies show a link between lack of basic hygiene, specifically oral, and declining cognitive health which leads to dementia. Therefore, the link between the health of the oral microbiome and cognitive decline should not be overlooked. Additionally, the collection of specimens from the oral microbiome is easily doable. This practice does not involve any invasive procedures (2) and should not be something of which to be afraid.

Porphyromonas Gingivalis and Alzheimer's Disease

A bacterium called Porphyromonas Gingivalis, which is a causative organism for Chronic Periodontitis is specifically linked to developing plaques, dementia, and eventual Alzheimer's disease. A study analyzed Cerebrospinal fluid (fluid present around the brain and spinal cord) samples from ten Alzheimer's Disease patients and concluded that the data had evidence of Porphyromonas Gingivalis infection in the brain of the patients. The reason behind this phenomenon can be attributed to the fact the Porphyromonas

Gingivalis is able to access the brain through infection of monocytes (a type of white blood cells), direct infection through damaged blood-brain barrier cells, or infection through cranial nerves, specifically the olfactory or trigeminal nerves. The trigeminal nerve has also been shown to aid the transportation of Treponema from the oral cavity to the brain leading to Alzheimer's Disease.

As discussed, poor oral health can impact overall systemic health. Maintaining oral health can have positive effects beyond the oral cavity. Please consult with your Dentist and Hygienist on the best ways to maintain your oral health.

(1) Singhrao, S. K., & Olsen, I. (2019). Assessing the Role of Porphyromonas gingivalis in periodontitis to determine a causative relationship with Alzheimer's disease. Journal of oral microbiology, 11 (1), 1563405.

(2) Orr, M. E., Reveles, K. R., Yeh, C. K., Young, E. H., & Han, X. (2020). Can oral health and oral-derived biospecimens predict the progression of dementia?. Oral diseases, 26 (2), 249-258.