Prosthodontic Management of neurodegenerative diseases in Geriatric Patients.

Review Article

Dr. Shravani Thanneeru*, Dr. Neerja Mahajan**, Dr. Rajesh Sethuraman***

ABSTRACT

Neurodegenerative diseases are among the most difficult to treat and destructive diseases in medicine. A heterogeneous group of chronic and progressive diseases, these include Alzheimer's, Parkinson's, and Huntington's diseases. Dentists dealing with patients with any of these disorders face major cognitive, motor, and behavioural problems, as well as dental maintenance. While the treatment of patients with Alzheimer's disorder advanced neurodegeneration remains challenging, increasing knowledge of the aetiology and pathogenesis of these diseases has provided new opportunities and new insights about their treatment needs. Dental treatment in the early stages of the disease is very important and needs to be treated definitively to create a stable oral condition. This can improve quality of life and help reduce dental deterioration in the later stages of the disease when dental treatment can be difficult.

KEYWORDS: Alzheimer's disorder, Parkinson's disease, oral health, prosthodontic

INTRODUCTION:

Neurodegenerative diseases are characterized by tremors, unstable posture, and rigidity of the muscles. The incidence and prevalence of the neurodegenerative disease are increasing with age. The etiology of these diseases could be a result of the combination of genetic predisposition, aging, and exposure to various chemicals and pesticides[1]. These patients also develop behavioural problems such as depression, dementia, altered sleep patterns, and cognitive impairment.

The orofacial findings in neurodegenerative diseases include mask-like appearance of the face due to reduced facial muscle movements. Reduced tongue movements and slow swallowing pattern is typically seen with reduced taste perception because of the medications[1,2]. Drooling of the saliva from the corners of the mouth along with angular cheilitis is seen. The overall oral hygiene will be poor and increased susceptibility to caries. The main goal of prosthodontic management in patients with neurodegenerative disease is to provide better quality of life with the best functional, aesthetical, and phonetical results. Studies have proven that neurodegenerative diseases have an association with impaired masticatory efficiency and thereby altering jaw movements and biting forces[3].

A dentist's clinical judgment is very crucial for providing dental treatment for an individual with dementia. The patient along with their family and caretakers becomes the decision tree in this process. Ettinger has illustrated important considerations for this process which are as follows[4]:

1.Patients' cooperation, level of physical deformity, and cognitive state.

2.Presence of Symptomatic or asymptomatic dental problems.

The dental management philosophy should be such that the individual should benefit from the treatment, and the treatment should be directed towards the elimination of the pain, control further infection, and prevent new disease progression.

The individuals diagnosed with Alzheimer's Disorder the average life span ranges from 8 to 10 years. The early diagnosis of Alzheimer's Disorder becomes important as the individual's capability to

*PG Student, **PG Student, ***Professor & Head, ****Senior Lecturer

No-9 Department of Prosthodontics, K M Shah Dental College, and Hospital,

Sumandeep Vidyapeeth Deemed to be University, Piparia, Vadodara 391760

ADDRESS FOR AUTHOR CORRESPONDENCE : Dr. Shravani Thanneeru, Email: shrasharan@gmail.com, :+91 9172561544

carry self-care and accept dental treatment will be predicted.

Oral health care planning guidelines for Alzheimer's disorder and Parkinson's disease patients are as follows[4,5,6,7]:

- Instigate appropriate preventive measures to minimize dental disease as soon as possible.
- Dental treatments should be carried out in the early stages of Alzheimer's disorder.
- Ensure dentures are named; cleaned professionally on a regular basis; and renewed for Alzheimer's Disorder patients.
- duplication technique when their replacement is necessary.
- Initiate regular checkups to the individual's needs to maintain the oral status.
- Alzheimer's' disorder adopting an open-door approach to reduce fear, stress, and awkwardness for the caretaker and the patient.
- On a day-to-day basis, the following guidelines are useful when providing oral care for people who have Alzheimer's Disorder: Recognition that some people have good days and bad days and appointing the patients on their good days for dental treatment.
- Short dental appointments
- Repeated instructions should be given to the patient because of short-term memory.
- Positive energy and the use of appropriate touch are useful, reassuring gestures.
- Resist the temptation to speak more loudly as this will not aid understanding.
- Emotional lability causes swings from laughing to crying within a short space of time. This is not because of dental treatment. It is a symptom of Alzheimer's Disorder.
- Warning dental staff about the possibility of such mood swings makes it less distressing for them and easier to cope with. Rather than focussing on the mood swing, distraction is a useful coping strategy.
- Physician consent of the patient is required for Parkinson's disease patients.
- Informed consent by the patient or caretaker should be taken for Parkinson's disease patients.
- To prevent urinary urgency and incontinence patient should have an empty bladder.
- Patients should be seated upright position on the dental chair.
- Drooling of saliva and hyper-muscle movement is seen in Parkinson's disease patients such patients cannot open their mouth so using an extraoral ratchet-type prop or intraoral rubber bite block may help to open the mouth.

Prosthodontic management for Alzheimer's Disorder:

Denture requirements:

A study conducted by Whittle et al.[8] on people with early dementia, reported that a higher population who were edentulous and the dentures worn were significantly older than in a population without dementia. Also stated that patients who have cognitive impairment with dementia have poor denture hygiene.

Denture wearing

Shimazaki et al.[5] suggested that patients with poor oral health status especially those people who are edentate and without replacement dentures, are more likely to have deterioration in systemic health. Denture-wearing success (particularly of complete dentures) depends, to a large extent, on the wearer's ability to control the dentures with

their oral musculature. It also relies on the presence of an Alzheimer's disorder adequate amount and quality of saliva. Dementia can impair the patient's ability to wear a denture. Muscle spasms, muscle in-coordination, rigid facial muscles, sucking reflex, reduced salivary function, postural hyper-salivation, and poor muscle control that can occur in dementia conspire to jeopardize denture retention and control, lead to loose dentures. For some individuals, this will mean they are not able to cope with dentures, whilst others will require the use of a denture fixative/adhesive to increase denture retention and denture-wearing confidence[9,10]. As dementia progresses and muscle skills diminish, previously seemingly well-fitting dentures may appear to become loose. These should not be discarded as it may be possible to reline or rebase them. Also, they can contribute valuable information to the process of providing new dentures, such as the arch form, polished surface, and contours.

Denture loss

Dementia patients usually complain of Denture loss. Thus, causing difficulty in wearing new dentures. An additional problem can be that the individual no longer possesses the cooperation which is necessary to allow the provision of new dentures. Carers are often unaware of the cooperation, the technical skill, and the muscle control required to result in 'successful' dentures. In these challenging situations, it is prudent to have a relative/carer sit in on the dental treatment visit and allow them to see the problems involved with taking impressions, etc. when a person cannot cooperate or resists treatment[11].

Denture provision

The person with dementia may have difficulty in handling their new dentures, even if they have previous denture wearers with no complaints.

They will need to be encouraged, by their carer, to persevere with the dentures. New dentures should be provided using conventional techniques. Neutral zone technique and use of training bases can be given to people with dementia because of their diminished capacity to comprehend and cooperate.

Denture marking

Dentures should be marked accordingly with the name of the dementia patient. New dentures should be permanently marked during construction, by the technician. Currently worn dentures can be temporarily marked using a simple technique that will last for 6–12 months. The denture should be checked periodically to ensure the name is still legible and marked renewed as necessary. Naming dentures does not prevent denture losses but also helps in reuniting with their owner[10].

Denture and mouth hygiene

Denture and mouth hygiene may need to be undertaken by a career. Dentures should be cleaned in, or over, a bowl of warm water so that, should they be dropped, the water will cushion their fall preventing breakage. They should be thoroughly brushed on all surfaces with a tooth or denture brush and liquid soap or toothpaste to remove food debris and plaque. In a care home or hospital setting, only one person's dentures should be cleaned at a time. When there are no natural teeth, the mouth still requires gentle cleaning either with a soft toothbrush or a flannel wrapped around a finger. In progressive neurogenic disorders, it is important to ensure that stagnant food that has not been swallowed is removed from

around the mouth. This can be done using a cloth or flannel wrapped around a finger to sweep the buccal (cheek) pouches for food. Its removal reduces the risk of aspiration and subsequent chest infection, as well as prevents bad breath[12].

Prosthodontic management for Parkinson's disease:

Removable prosthesis:

Patients with Parkinson's disease have trouble in managing and maintaining the dentures due to tremors, the rigidity of the orofacial musculatures, and drooling of saliva. So, impressions should be made by hydrophilic properties and fast-setting material. Hard waxes or compound impression materials should be used for recording jaw relation. The neutral zone technique and selective grinding of the teeth should be done to provide stability and retention of the dentures. Dentures should be reinforced by metal mesh or base or the use of a high-impact denture base is recommended[2,9].

Fixed partial denture: rubber dams and suction aids should be used to prevent drooling of saliva. Cordless gingival retraction techniques like vinyl polysiloxane should be used. Pontics used should be self-cleansing. If the patient is a bruxer then metal or gold bridges should be recommended[10].

Implant Surgery: Overdenture and dental implants can be recommended[11.,13].

CONCLUSION: The prosthodontic management of patients with neurodegenerative disease is a very challenging task and it could be accomplished by the clinician by having adequate knowledge about the disease and its complications. Compromised oral hygiene due to impaired memory and function can hamper the oral quality of life of such patients. Developing and maintaining good oral health practices can help to improve their oral health. Also, proper education and motivation of the patients and caretaker is also required for better oral health.

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