Vermilionectomy was shown to be superior to several pharmacological treatments. Side effects caused by this surgery include paresthesia (10% to 33.3%), infection (10%), and necrosis (10%). Patients also reported bruising, swelling, and hematoma development.

Electrodessication produced clinical improvement in 14 patients, but just 2 of 6 patients who underwent biopsies postoperatively had histological improvement. Pain and burning sensation were common side effects of electrodessication.

Cryosurgery was used concomitantly with imiquimod in 8 patients. All demonstrated clinical improvement, but patients reported some pain, local irritation, and redness.

Anti-inflammatory Agents

Two articles investigated the use of diclofenac gel over a follow-up time of 6 to 52 weeks. One that combined diclofenac 3% gel and hyaluronic acid 2.5% showed 44% of patients had complete remission of the whitish plaques and exfoliative areas and 56% had partial clinical remission of AC. The use of diclofenac 3% gel alone yielded clinical improvement in 4 of 6 patients. The side effects of diclofenac gel included edema, erythema, and burning sensation.

DISCUSSION

Although several treatment modalities are available for the management of AC, none showed itself to be clearly better than the others. Thus the evidence available for the various treatments of AC remains inconclusive regarding the best choice for patients.

Clinical Significance

The evidence reviewed was obtained from small patient samples and included a wide range of results. Clinical improvement was often not accompanied by histological improvement. Randomized clinical trials are needed to yield the type of evidence on which clinical practice can confidently be based. Histopathological alterations that occur when treating potentially malignant disorders like AC should be a specific outcome sought for these future studies.

Salgueiro AP, de Jesus LH, de Souza IF, et al: Treatment of actinic cheilitis: A systematic review. *Clin Oral Invest* 23:2041-2053, 2019

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ALZHEIMER'S DISEASE

Dental care for patients with dementia

BACKGROUND

Alzheimer's disease is the most common cause of dementia, which is a chronic condition associated with aging. Alzheimer's disease and related disorders (ADRD) affect about 8% of the US adult population. These disorders cause progressive loss of mental and behavioral functions, so that the patient becomes unable to function in essentially all areas of life, which includes oral health care. Conventional oral health care delivery systems have failed to address the needs of persons with ADRD and face a wealth of barriers to achieving proper measures for these people. Poor oral health can negatively affect systemic health and well-being for patients with Alzheimer's disease and cause a deterioration of their behavior as well as their susceptibility to aspiration pneumonia, a leading cause of death among older adults, particularly those suffering dementia. The current oral health care status of patients with Alzheimer's disease and strategies for promoting better oral health were presented, along with a tool to assess the process.

CURRENT ORAL HEALTH STATUS FOR PERSONS WITH ALZHEIMER'S DISEASE

Oral Health Status

Older adult patients with dementia and those without dementia show similar degrees of edentulism, numbers of remaining teeth, and decayed/missing/filled teeth (DMFT) index results, but those with dementia tend to have more coronal and root caries along with more retained root tips. Older adults with dementia also are more commonly affected by xerostomia and oral lesions, such as angular cheilitis, ulcerations, and stomatitis, than older adults without dementia.

Barriers to Oral Health Maintenance

Older adults may present several risk factors for rapid oral health deterioration (ROHD), and dentists need to be able to identify these factors. Generally they fall into those related to general health, social support, and oral health. Those with

Table 2. Checklist for Family Members/Caregivers Assessment of Current Oral Hygiene Routines and Dietary Habits with Recommended Goals

Family Members/caregivers assessment of oral hygiene routines and dietary habits	Recommended goals
Toothbrushing routine	Brushing at least two times a day, for at least 2 min, covering all teeth and teeth surfaces. No visible plaque should be noticeable. As the disease progresses, the patient will need help with brushing.
Flossing routine	Flossing once a day, covering all areas between the teeth. This is usually not possible in the later stages.
Denture cleaning routine,	Dentures should be brushed with a denture brush at least once a day, covering all denture surfaces. No visible plaque should be noticeable. Dentures can also be soaked in a denture cleanser overnight.
Fluoride toothpaste	Non-prescription fluoride toothpaste should be used to brush patient's teeth at all times, unless a high-concentration fluoride toothpaste is prescribed.
Prescription oral health products (high-fluoride toothpaste, oral rinses, etc.)	If a prescription product is being used, make sure to adhere to the prescription directions. If directions are not available, contact the dentist or the pharmacy.
Non-prescription oral health products (denture cleaning and adhesives, oral rinses, etc.)	If the patient is using non-prescription oral health products, check with the dentists if they are still appropriate and get information on how is the best way to use it.
Sugar intake and frequency	If possible, reduce the amount and frequency of sugary food and beverages. Substituting sugar with no-calories sweeteners can be helpful.
Acidic food and beverage intake and frequency	Reduce the amount and frequency of acidic foods and beverages. Substitute with non-acidic items can be helpful
Dental care routines (periodic exams and cleanings)	Six months or shorter dental visits, if possible.

(Courtesy of Marchini L, Ettinger R, Caprio T, et al: Oral health care for patients with Alzheimer's disease: An update. *Spec Care Dentist* 39:262-273, 2019.)

cognitive impairment are also prone to functional losses that can impair their ability to maintain a proper oral health regimen. In addition, depression can influence oral health. Although the drugs used to treat Alzheimer's disease have not been shown to have significant oral side effects, those that help manage the challenging behaviors of these patients often cause dry mouth. If the patient is dependent on a caregiver or institutionalized, these situations can be barriers to receiving proper oral hygiene care. Persons who have dementia and have multiple large restorations, removable partial dentures, periodontitis, and xerostomia can also suffer poor oral health. Dentists must recognize that many older adults without dementia also exhibit these conditions.

Among the societal barriers to care are lack of adequate reimbursement for dentists and dental hygienists who provide domiciliary oral health care, lack of enforcement of appropriate regulations regarding oral hygiene routines in long-term care institutions, lack of caregiver education, caregiver overload, and high turnover among nursing home caregivers. At the level of dental professional training, just over half of the US dentists have compulsory practical clinical training in geriatric dentistry, although nearly all dental schools teach geriatric dentistry. Few dentists have advanced training in geriatric dentistry and few fellowship programs exist. Patient-level barriers include the aggressiveness that accompanies dementia as well as the inability to communicate oral pain or discomfort.

STRATEGIES FOR PROMOTING ORAL HEALTH CARE

Diagnosis and Early Intervention

Patients with Alzheimer's disease should be diagnosed as early as possible and treatment instituted when the patient is still able to perform most activities of daily living. It would be helpful if the patient's physician could include in the family/caregivers initial checklist that they should schedule an appointment with the patient's dentist.

The dentist proceeds with a comprehensive examination, oral diagnosis, and treatment plan that takes into consideration the nature of the disease. Maintenance should include careful assessment of the patient's oral hygiene routines and dietary habits (Table 2). In the early stage of the disease the patient's autonomy should be encouraged so that he or she will maintain normal hygiene routines, with supervision as needed. Supervision may be limited to reminding and cues, checking for the adequacy of the patient's care, ensuring that dentures are removed at night, and checking the cleanliness of the dentures. A high-concentration fluoride (5000 ppm) toothpaste should be used twice a day for caries prevention, and the patient should be scheduled for recall every 6 months or less, depending on the patient's needs.

With progression to more advanced stages, the patient will progressively become less able to provide personal oral hygiene independently and the family/caregivers will need to

provide more assistance. If oral hygiene routines are established early, the patient may be less resistant to efforts to help. Autonomy should be encouraged as long as it is feasible. However, once the patient reaches the severe stage, oral hygiene is likely to be limited to what the caregivers provide. Resistance at this stage can be managed by having a second caregiver enter and deliver care as the first caregiver leaves or by distraction, such as singing or having the individual hold a favorite item.

Care Provided in Domiciliary and Institutional Settings

The physician who has diagnosed dementia and the dentist play vital roles in stimulating the patient's family members to provide domiciliary oral hygiene and in educating family members regarding how to provide appropriate daily oral hygiene care. Usually care provided in long-term institutions is poor. Although much research and debate have been expended looking for ways to fix this situation, no resolution has been achieved yet. Among the suggested ways to improve care are an effective training program for caregivers to provide oral hygiene for residents that lasts more than an hour or so coupled with the training of oral health 'champions' who are responsible for training their peers and supervising oral hygiene in the institutional setting. Administrative support that will enforce oral hygiene protocols is essential, and oral health outcomes should be included in each patient's therapeutic goals. Because of the high turnover among direct care workers in nursing homes, ongoing educational materials, including mobile phone apps and online courses, are important aids to help train new staff members.

DENTAL TREATMENT ASSESSMENT TOOL

The ROHD assessment teaching tool consists of a 10-question evaluation to guide the thought process of the oral health care provider through the tasks required. These include data gathering, risk assessment, and treatment planning for patients who have multiple complicating factors, which would include patients with Alzheimer's disease. Dentists are challenged to check that all data are available before their analysis begins, which includes general health information, social support, and oral health conditions. Dentists then focus on the data most relevant for ROHD and treatment planning. The state that will result should nothing be done is also considered, as well as the patient's risk for ROHD. Treatment alternatives are evaluated, eventually leading to a choice of the best alternative for the patient and the justification for selecting this course of action. The dentist must then plan how to communicate with the patient and caregiver concerning the best treatment and maintenance plan. Finally, the dentist is challenged to determine the effectiveness of the plan and its relationship to the data on which it is based.

Clinical Significance

Oral health in patients with ADRD is currently poor, leaving them vulnerable to ROHD and a poor quality of life. Primary care providers should refer newly diagnosed dementia patients to an oral health care provider so that oral health care plans can be formulated and put into place as early in the process as is possible. Each treatment plan must be customized to the patient's individual needs and disease stage if good outcomes are to be obtained. Future research into Alzheimer's disease may bring new and more effective treatment options forth that will prolong the highest quality of life for these patients.

Marchini L, Ettinger R, Caprio T, et al: Oral health care for patients with Alzheimer's disease: An update. *Spec Care Dentist* 39:262-273, 2019

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CRYOTHERAPY

Pain relief after third-molar surgery

BACKGROUND

Third-molar surgery is a common procedure undertaken by maxillofacial surgeons. Often the patients suffer pain, swelling, and trismus after this surgery, which can affect their daily function and quality of life. Nonsteroidal anti-inflammatory drugs (NSAIDs) are widely used to manage postoperative pain and inflammation, but these agents are associated with a risk for gastrointestinal tract symptoms and cardiovascular events. Cryotherapy is used in oral and maxillofacial surgery to manage immediate postoperative inflammatory complications.