Hereditary Angioedema in Older Adults and Considerations for Dental Treatment

Angioedema hereditario en adultos mayores y consideraciones para el tratamiento dental

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Abstract:

Introduction:

Hereditary angioedema (HAE) is a rare inherited disease characterized by recurrent episodes of non-pruritic, non-pitting edema in cutaneous or submucosal tissues. This clinical syndrome is distinguished by a rapid increase in vascular permeability of the affected tissues, not caused by allergic reactions as in common cases of edema. Most research focuses on diagnosing young individuals, but few publications address the topic in the field of geriatrics, and even fewer in dentistry.

Objective:

To analyze the clinical and dental implications of hereditary angioedema (HAE) in older adult patients in order to establish recommendations for their comprehensive care in geriatric dentistry.

Methodology:

A narrative review with a structured search was conducted, following the principles of the PRISMA 2020 guidelines, including 28 scientific sources published between 2010 and 2025. Due to the lack of studies addressing hereditary angioedema, aging, and dentistry simultaneously, we selected publications relevant to the pathophysiology and pharmacologic management of HAE, clinical and pharmacological considerations in older adults, and dental implications including potential drug interactions. The evidence was integrated to propose a clinical framework applicable to the dental care of geriatric patients with HAE.

Results:

Multiple clinical and systemic factors were identified that must be considered in the dental care of older adults with HAE, including the risks associated with invasive procedures, pharmacological interactions, and oral side effects related to treatment.

Conclusions:

Dental management of patients with HAE is already complex on its own, and when combined with age-related changes, the patient becomes extremely complex.

Key aspects must be considered, such as the history of attacks, their triggers and

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consequences, comorbidities, polypharmacy and its side effects, drug interactions, loss of physical and intellectual function, and the economic investment in the patient's health.

Introduction

Hereditary angioedema (HAE) is a rare chronic autosomal dominant inherited disease, with an estimated prevalence of 1 in 50,000 people. However, it is reported that 25% of affected individuals have no family history (Betschel et al., 2019). It is characterized by recurrent episodes of non-pruritic, non-pitting edema in cutaneous or submucosal tissues.

It most commonly affects the skin, upper airways, gastrointestinal tract, urogenital region, and face (Longhurst & Valerieva, 2023; Maurer et al., 2022; Sarkar et al., 2023). This clinical syndrome is distinguished by a rapid increase in vascular permeability of the affected tissues, not caused by allergic reactions as in typical histamine-mediated edema.

HAE specifically depends on bradykinin, which is why the use of drugs such as epinephrine, antihistamines, or corticosteroid therapies does not relieve the symptoms and causes delays in crisis and emergency management (Alfaro-Murillo et al., 2020; Rodrigues et al., 2013; Sarkar et al., 2023).

In 2021, the World Allergy Organization (WAO) and the European Academy of Allergy and Clinical Immunology (EAACI) conducted a review and update of the international guidelines for the diagnosis and treatment of HAE. The panel consisted of scientists, patients, patient advocates, and medical experts in HAE from different regions of the world. This expert panel had specializations in various medical fields; however, dentistry and geriatrics were not mentioned.

These organizations acknowledge that the current evidence is limited for making treatment decisions and that access to diagnostic testing and modern therapies for these patients is highly restricted in several countries (Maurer et al., 2022).

HAE can be caused by a deficiency (type I) or dysfunction (type II) of C1 inhibitors (C1-INH), resulting in excessive production of bradykinin and activation of B2 receptors. In the year 2000, a type of HAE was described without alteration in C1-INH levels, predominantly in females. This form is known as type III HAE or estrogen-dependent HAE, and episodes may occur in the presence of elevated estrogen levels (oral contraceptives, hormone replacement therapy, and pregnancy).

Unlike types I and II, type III does not show decreased levels or dysfunction of C1-INH (Morimoto et al., 2020), and its symptoms tend to present during adulthood or old age (Rodrigues et al., 2013).

Eight types of HAE have been identified, and there are also patients with this disease who have unknown mutations (López, 2021; Maurer et al., 2022), which is why this article addresses the topic in a general sense.

The onset of HAE (except for type III) does not favor any particular sex and may begin at any age. The frequency, intensity, triggers, and affected body regions of episodes may vary. Literature indicates that episodes can last 2 to 5 days and occur every one to two weeks. Triggers are diverse and sometimes unclear.

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They include mild accidental physical trauma or trauma from medical and dental procedures, emotional factors (such as anxiety and fear), physical stressors (such as exercise), and others (Jean-Baptiste et al., 2022; Kuhlen & Banerji, 2015; Sarkar et al., 2023; Sinnathamby et al., 2023), all of which significantly impact the quality of life of these patients.

Most studies focus on diagnosing young individuals; however, few publications address the topic within the field of geriatrics, and even fewer within dentistry.

Therefore, this article aims to highlight the importance of dentists being familiar with HAE, while also recognizing that older adults present unique challenges due to the aging process, requiring special care during this stage, in addition to the presence of potential comorbidities and HAE.

The geriatric dentist must be aware of this condition, as although the disease itself is rare, documented cases from the perspective of therapeutic dental management in older adults are even rarer.

Patients may have lived with HAE for many years or may be experiencing the onset of the condition during old age (type III HAE). The absence of literature addressing hereditary angioedema (HAE), aging, and dentistry simultaneously motivated the development of this narrative review, whose objective is to integrate the best available evidence in each axis and propose a clinical framework applicable to dental practice.

Methodology

A narrative review with a structured search was conducted, inspired by the principles of the PRISMA 2020 guidelines, to ensure transparency and reproducibility in the process of identifying and selecting the literature.

The bibliographic search was carried out between 2010 and 2025 in the databases PubMed, ScienceDirect, SciELO, and Google Scholar, as well as in clinical guidelines and institutional documents from international organizations (WHO, WAO/EAACI).

Combinations of MeSH descriptors and free-text terms were used, such as: ("Hereditary Angioedema" OR "C1-INH deficiency" OR "bradykinin-mediated angioedema")

AND ("Aged" OR "older adults" OR "geriatric") AND ("Dentistry" OR "Oral health" OR "Dental care" OR "Dental procedures")

The specific search did not identify studies addressing hereditary angioedema, aging, and dental care simultaneously. In view of this absence, the strategy was expanded to include three complementary axes of evidence:

- Pathophysiology and pharmacologic management of hereditary angioedema.
- Clinical characteristics, comorbidities, and polypharmacy in older adults.
- Drug interactions and dental considerations relevant to patients with HAE.

Original articles, case reports, reviews, clinical guidelines, and institutional documents published in English or Spanish between 2010 and 2025 that provided information relevant to at least one of these three axes were included.

Studies in animals or in vitro, publications without full-text access, and articles published

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prior to 2010 (except for essential references on HAE pathophysiology) were excluded.

The search identified a total of 82 records. After removing duplicates (n = 21) and screening titles and abstracts, 33 were excluded for not meeting the thematic criteria. Finally, 28 publications were assessed in full text and included in the narrative synthesis.

The results were organized into a thematic table (Table 1) summarizing the findings according to the three defined axes.

Due to the heterogeneity of study designs (guidelines, reviews, case reports, multicenter surveys), no quantitative risk-of-bias scales were applied. Instead, a critical appraisal of the clinical relevance, currency, and applicability of each source was performed.

Table 1. Publications Included in the Narrative Synthesis

Author / Year	Type of Study / Document	Population or Context	Thematic Axis 1=HAE & pharmacotherapy; 2=Geriatric aspects; 3=Dental/Oral considerations	Relevance to Geriatric Dental Care for HAE
Alfaro-Murillo et al., 2020	National descriptive study	Patients with HAE in Costa Rica	1	Provides epidemiological background and highlights challenges in diagnosis and access to treatment
Betschel et al., 2019	International guideline	HAE in all age groups	1	Comprehensive recommendations for diagnosis and treatment
Maurer et al., 2022	WAO/EAACI guideline	HAE across all age groups	1	Current reference for acute management and prophylaxis
Baptist et al., 2024	Multicenter survey	Older adults with HAE	1 & 2	Describes impact on quality of life, anxiety, and barriers to medical care
Singh et al., 2020	Multicenter survey	HAE patients with dental experiences	1 & 3	Demonstrates association between oral hygiene/procedures and HAE attacks
Morimoto et al., 2020	Case report	Adult with type III HAE undergoing tooth extraction	1 & 3	Highlights perioperative dental management under IV sedation
Forrest et al., 2017	Case report	HAE patient with fatal post-extraction laryngeal attack	1 & 3	Emphasizes procedural risk and need for preventive measures
Kuhlen & Banerji, 2015	Clinical review	Special populations: children, women, older adults	1 & 2	Discusses pharmacologic considerations in vulnerable groups
Diaz-Menindez et al., 2023	Therapeutic review	Berotralstat oral therapy	1	Relevant for drug–drug interaction considerations in dental care
Reshef et al., 2025	Phase-3 clinical trial	Garadacimab for HAE prophylaxis	1	Emerging therapy improving procedural safety

Riedl et al., 2024	Clinical trial	Donidalorsen for HAE prophylaxis	1	Monthly subcutaneous treatment relevant for long-term management
Canio, 2022	Review	Polypharmacy in older adults	2	Highlights interaction risks with commonly used dental medications
Burghardt et al., 2018	Systematic review	Non-pharmacologic interventions for dental anxiety	2 & 3	Provides evidence-based strategies to reduce stress-induced HAE attacks
Fuentes et al., 2021	Technical article	Panoramic radiography	3	Non-invasive imaging valuable for geriatric patients at risk of HAE attacks
Tirado et al., 2015	Technical article	Safe use of dental radiography	3	Addresses diagnostic imaging safety and minimal invasiveness
WHO, 2022	Institutional report	Global older-adult population	2	Frames general needs and barriers in geriatric healthcare
Kaplan & Joseph, 2017	Review	Bradykinin-mediated mechanisms in HAE	1	Provides pathophysiological foundation relevant to procedural risk
López, 2021	Review	Pathogenesis of HAE	1	Supports understanding of clinical course and therapeutic targets
Sarkar et al., 2023	Clinical review	Diagnostic challenges in HAE	1 & 2	Highlights delayed diagnosis and psychosocial consequences
Jean-Baptiste et al., 2022	Review + clinician interviews	Patient experience in HAE	1 & 2	Adds psychosocial insights applicable to dentist-patient communication
Perego et al., 2020	National cohort	Italian patients with HAE	1 & 2	Shows improved life expectancy due to modern therapies
HAEi, 2025	Scientific communication	Development of deucrictibant for HAE	1	Highlights future perspectives for preventive therapy
Adatia & Magerl, 2024	Practical guide	Use of berotralstat for C1-INH deficiency	1	Provides clinical safety considerations for chronic use
Medications for HAE, 2024 (Drugs.com)	Drug reference	Approved HAE therapies	1 & 3	Identifies potential interactions with common antibiotics and analgesics in dental care
Rodrigues et al., 2013	Case series	Estrogen-dependent type III HAE	1	Relevant for late-onset cases, often diagnosed in adult or older patients
Longhurst & Valerieva, 2023	Review of RCTs	Long-term C1-INH prophylaxis	1	Demonstrates efficacy in attack control facilitating safer dental procedures

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Pathophysiology of HAE

Hereditary angioedema attacks (HAEA) occur due to a fundamental reaction triggered by the complement system, the coagulation system, and/or the fibrinolytic system, resulting in the loss of natural control of the kallikrein–kinin system and leading to the excessive production of the protein bradykinin.

The increase in bradykinin makes blood vessels more permeable, causing plasma to leak into surrounding tissues and resulting in edema (Kaplan & Joseph, 2017).

The complement system (CS) encompasses three distinct signaling pathways: the classical pathway, the lectin pathway, and the alternative pathway. The symptoms of hereditary angioedema are primarily influenced by the first two signaling pathways.

The classical pathway involves a set of complement factors labeled C1 through C9, along with their respective regulatory proteins.

Among these regulatory proteins is C1-INH, which has a dual function: suppressing the activation of complement factor C1 and broadly inhibiting various activation processes.

The absence of C1-INH in the CS results in excessive production of the kallikrein/HMWK (high-molecular-weight kininogen) enzymatic complex, which leads to an overproduction of the protein bradykinin. Excessive levels of bradykinin trigger systemic inflammatory responses due to the separation of cells in the walls of small blood vessels.

This opening of intercellular junctions allows plasma to leak into surrounding tissues, resulting in uncomfortable swelling (edema).

Another way to activate the CS is through the lectin pathway, specifically via mannose-binding lectins, which play a role in the degradation of complement factor C4. Various factors such as tissue damage caused by accidents or surgery, stress, infections, and autoimmunity can activate both the classical and lectin pathways (Kaplan & Joseph, 2017; López, 2021; Sarkar et al., 2023; Sinnathamby et al., 2023).

The coagulation system also plays a role in increasing bradykinin activity. The C1-INH protein, which regulates specific aspects of the coagulation system, prevents the conversion of coagulation factor XII into factor XIIa, which in turn becomes FXIIf (fragmented factor XII) and stimulates the activation of complement factor C1 in the absence of antibodies.

Deficiency of C1-INH leads to elevated levels of the kallikrein/HMWK complex (Kaplan & Joseph, 2017; López, 2021; Maurer et al., 2022; Sarkar et al., 2023; Sinnathamby et al., 2023).

Furthermore, the increased presence of the kallikrein/HMWK complex results in elevated production of circulating plasmin, which subsequently causes a further increase in bradykinin levels.

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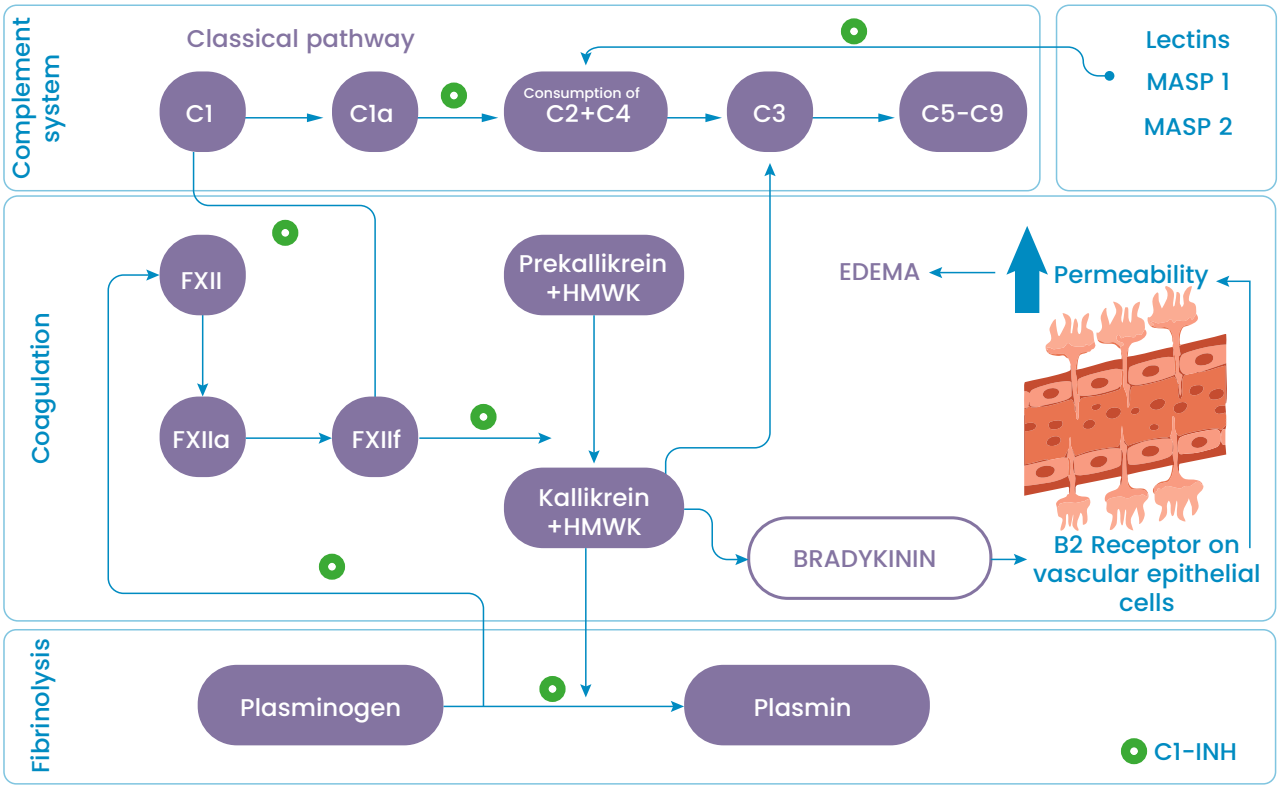

Figure 1. Pathophysiology of HAE
C1-INH: C1 inhibitors; HMWK: high-molecular-weight kininogen
Prepared by the authors.

HAE Attacks

HAE attacks (HAEA) follow an unpredictable course that can be debilitating and potentially life-threatening for the patient. A wide variability in symptoms has been observed, which may differ between patients and even between episodes in the same individual (Jean-Baptiste et al., 2022; Longhurst & Valerieva, 2023).

Episodes can be isolated or occur in rapid succession, leading to a reduced quality of life, not only due to the attack itself but also because of the constant fear and anxiety about their next occurrence, the need to avoid triggers, and the development of comorbidities such as anxiety and depression (Jean-Baptiste et al., 2022; Maurer et al., 2022).

Patients typically present with a wide range of symptoms that may manifest in different parts of the body. The most commonly reported include swelling, fatigue, pain, stomach ache, nausea, vomiting, headache, restlessness, mood changes, and psychological issues such as depression, sadness, and anxiety (Alfaro-Murillo et al., 2020; Longhurst & Valerieva, 2023).

Research has focused on reducing morbidity and preventing mortality in these patients in an effort to improve their quality of life (Jean-Baptiste et al., 2022).

The most frequently affected areas are the extremities and the gastrointestinal tract. Cutaneous attacks are not considered high-risk for complications or death, but they do cause significant lifestyle disturbances in terms of work,

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aesthetics, and function. This leads to periods of social withdrawal (from school, work, etc.) due to the inability to drive, walk, or embarrassment from facial disfigurement (Banerji et al., 2018; Baptist et al., 2024; Maurer et al., 2022; Sarkar et al., 2023), as attacks typically last between 2 to 5 days.

Laryngeal and lingual attacks are less common but are considered medical emergencies, requiring rapid administration of acute attack treatments, in addition to airway management. In some cases, intubation is necessary since respiratory compromise can be fatal. It has been reported that 33% of mortality in these patients is due to edema in the upper airways (3,4).

It is well documented that accidental or surgical trauma—such as medical procedures, dental surgery, and other interventions—can trigger attacks in the upper airway region. In these cases, angioedema usually appears within the first 48 hours. Other factors that may induce attacks include fatigue, psychological stress, febrile illnesses, and hormonal changes (Forrest et al., 2017; Maurer et al., 2022; Sarkar et al., 2023).

Some patients report prodromal symptoms that allow them to be prepared and administer the necessary medication before the onset of an attack. These symptoms have not been precisely defined, and their lack of specificity may lead to overuse of on-demand therapy (Maurer et al., 2022).

Despite these HAEA manifestations, it is important to note that the life expectancy of these patients is currently similar to that of the general population. Modern treatments have allowed this population to reach old age, where the cause of death is now more commonly related to other diseases (mainly neoplastic and cardiovascular) rather than laryngeal edema, as was previously reported (Perego et al., 2020).

Pharmacological Treatment of HAE

Over the past 10 to 15 years, treatment options have changed dramatically, with the development of therapies for both acute events and long-term prevention.

Older adults with HAE have lived with the disease for decades, during a time when knowledge about the condition was limited and treatment options were scarce. First-line treatments in the past were different, including tranexamic acid (an antifibrinolytic) and androgens such as danazol.

These treatments offered very limited benefits and had numerous side effects (Banerji et al., 2018; Baptist et al., 2024; Maurer et al., 2022; Sarkar et al., 2023).

Modern therapies have significantly reduced the frequency of attacks, thereby improving patients' quality of life (3). Agents used in the management of HAE include C1 inhibitors (C1-INH), ecallantide, icatibant, danazol, lanadelumab, berotralstat, and fresh frozen plasma (Sarkar et al., 2023). These treatments are designed for self-administration, with prior training provided by healthcare professionals (Sinnathamby et al., 2023).

These medications are categorized into two types: (i) drugs for acute attacks and (ii) prophylactic drugs used to prevent episodes. In the first category, intravenous C1-INH, ecallantide, and icatibant are commonly used (Longhurst & Valerieva, 2023; Maurer et al., 2022; Medications for Hereditary Angioedema, 2024;

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Sinnathamby et al., 2023); they are essential at the onset of an attack and help reduce the symptoms and duration of HAE episodes, regardless of severity. It is crucial to administer them as early as possible, since delayed administration is less effective (Diaz-Menindez et al., 2023; Maurer et al., 2022).

Recently, the FDA approved garadacimab, under the commercial name Andembry, the first monoclonal antibody that inhibits FXIIa to prevent HAE attacks, demonstrating a significant reduction in HAEA episodes (Reshef et al., 2025). Donidalorsen, an antisense oligonucleotide that reduces hepatic prekallikrein production, is currently pending FDA approval.

It has shown efficacy in HAE prophylaxis, with a favorable safety profile and good tolerability, positioning it as a promising therapeutic option for monthly subcutaneous administration in HAE patients (Riedl et al., 2024). Another emerging drug is deucrictibant, a potential treatment currently undergoing clinical trials (HAE Internacional (HAEi), 2025).

Medications for HAEA and Dentistry

Most of the drugs used to manage HAEA do not interact with medications commonly used in dentistry. Berotralstat is the only drug reported to have interactions that dentists should be cautious about (Diaz-Menindez et al., 2023; European Medicines Agency, 2021; Longhurst & Valerieva, 2023; Maurer et al., 2022).

The use of this drug in combination with antibiotics (azithromycin, clarithromycin, erythromycin) and antifungals (itraconazole, ketoconazole) increases plasma levels of berotralstat, raising the risk and severity of side effects. When combined with benzodiazepines (alprazolam, clonazepam, midazolam), corticosteroids (betamethasone, dexamethasone, prednisone), opioids (codeine, hydrocodone, morphine, oxycodone), H1 receptor antagonists (chlorpheniramine), or anti-inflammatory and immunosuppressive agents (deflazacort), it can elevate blood levels of these drugs, which may intensify their side effects—such as reduced immune function, respiratory depression, deep sedation, liver damage, among others (Adatia & Magerl, 2024; European Medicines Agency, 2021; Medications for Hereditary Angioedema, 2024).

Dental Care for Older Adults with HAE

Aging is the process through which individuals undergo morphological and physiological changes over time, accompanied by the accumulation of various cellular and molecular damage that gradually and individually leads to a decline in physical and psychological capacities, with an increased risk of developing multiple diseases (Envejecimiento y salud, 2022).

Patients who have lived with HAE now face the challenges of aging alongside the condition they have suffered from for decades. A lack of awareness about HAE during early life led many to receive treatments and therapies that resulted in adverse effects on their physical and emotional health (Baptist et al., 2024).

It is well documented that physical trauma, such as dental surgery, can trigger HAEA (Maurer et al., 2022), and for this reason, invasive treatments should be avoided. In some cases, however, such procedures are unavoidable and must be approached with several precautions. It is essential to work within a multidisciplinary framework, where the geriatric dentist communicates with the primary care

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physician—through consultation—regarding the necessity, complexity, and severity of any planned invasive procedures. This allows for the joint development of an action plan, including prophylactic therapy before, during, and after treatment.

More than one-third of patients undergoing tooth extractions without prior prophylaxis develop HAEAs, which may begin within 10 to 24 hours after the procedure (Maurer et al., 2022; Morimoto et al., 2020).

Due to comorbidities, patients often struggle to determine whether the symptoms they experience are related to HAE or to another condition, which can lead to overmedication (Sarkar et al., 2023).

With the emergence of new illnesses, polypharmacy becomes a concern, increasing the risk of adverse health effects, drug interactions, and medical costs. A higher number of medications raises the likelihood of unpredictable physiological responses in older adult patients (OAPs) (Canio, 2022).

Many drugs commonly used to treat diseases in the elderly have oral side effects, the most common being hyposalivation and xerostomia, which increase the risk of oral infections, dental caries, and periodontal disease.

Vomiting is a frequent side effect of HAEA medications and, depending on its severity and frequency, may cause damage to both hard and soft oral tissues, such as dental erosion. Another significant side effect is coagulation alteration, which can complicate unavoidable invasive dental procedures (Longhurst & Valerieva, 2023).

It is also important to recognize that aging is often accompanied by reduced access to healthcare services due to economic issues (such as loss of employment), decreased physical capacities, or the HAEA itself, which may cause lower limb edema, impairing mobility and the ability to travel.

HAEAs have emotional consequences, including anxiety, depression, and stress, which in turn can trigger further HAEAs.

Many of these emotional issues are tied to past experiences of receiving unnecessary medical treatments due to a lack of awareness among healthcare professionals about HAE and the delayed diagnosis of the disease (Sarkar et al., 2023). Many patients fear medical and dental procedures because, throughout their lives, they were misdiagnosed, and their pain and inflammation were improperly treated.

It is necessary to create a comfortable environment for the patient, where they feel at ease with the professional team and the procedure itself, ensuring that both pain and anxiety are controlled. Multiple non-pharmacological techniques can assist in managing patient behavior, including desensitization, modeling, positive reinforcement, music therapy, aromatherapy, and clinical hypnosis, among others (Burghardt et al., 2018).

In dental care, the professional who should lead the treatment of OAPs is the geriatric dentist, who is trained to manage age-related conditions and knowledgeable in the pathophysiology of diseases such as HAE.

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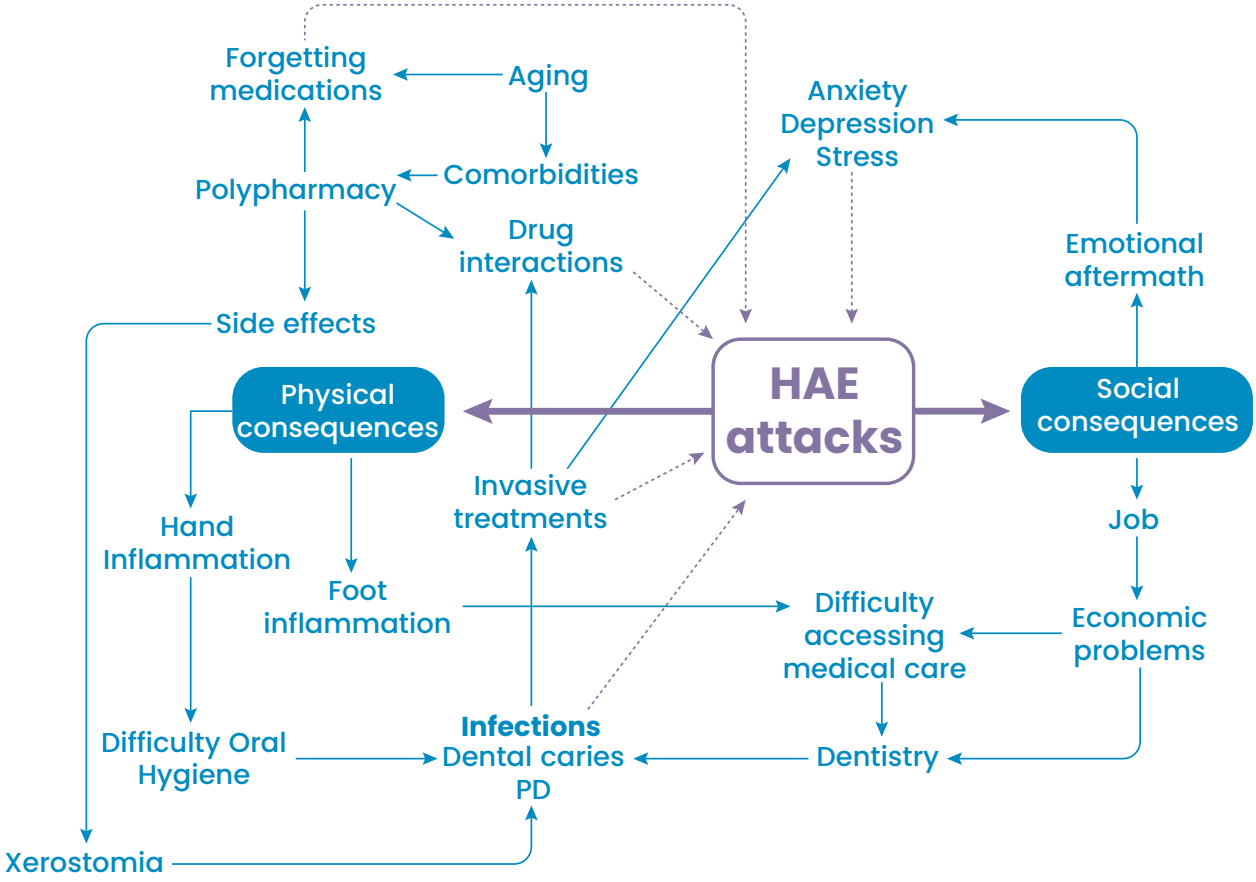

Figure 2. Hereditary angioedema attacks, their social consequences, and physical sequelae. (PD: periodontal disease) Prepared by the author.

Prevention and Promotion of Oral Health in Older Adult Patients with HAE

Once invasive dental treatments have been completed, it is necessary to develop a preventive care plan to follow in the subsequent years. Literature shows that patients with chronic illnesses often neglect the needs of their oral cavity, which again calls for an interdisciplinary approach to promote the importance of maintaining adequate oral health.

In cases of HAEAs affecting the hands, performing oral hygiene maneuvers can become difficult.

Providing alternatives such as modified toothbrush handles (thicker grips), electric toothbrushes, mouth rinses, waterpicks, among others, offers patients the tools to continue preventing oral diseases. When these options are not feasible, a caregiver or responsible party—previously trained in oral hygiene therapies—can be designated to perform these tasks during acute HAE episodes.

Proper oral care reduces the need for surgical interventions (such as extractions) and the development of acute or chronic intraoral infections, thereby lowering the risk of HAEA, the high financial burden of procedures (Baptist et al., 2024), and disease-related sequelae.

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After eliminating infectious foci, it is important to encourage older adult patients (OAPs) with HAE to schedule periodic visits with the geriatric dentist, in addition to routine radiographic evaluations such as panoramic radiographs, which allow for a quick, painless, and comprehensive assessment of the maxillary and mandibular structures (Fuentes et al., 2021; Tirado Lr et al., 2015).

The geriatric dentist (GD) must educate patients with HAE about the necessity of regular care and evaluation—even if their dental history includes HAEA triggered by minor oral trauma or dental surgeries (Singh et al., 2020).

Communication Between Healthcare Professionals and Patients

Effective communication with patients is essential to obtain a complete medical history, including a thorough investigation of the triggering factors for their HAE episodes, previous dental treatment history, and a subsequent discussion of necessary and elective treatments, with realistic expectations. Older adult patients (OAPs) may present with various comorbidities and polypharmacy, which must be carefully analyzed before considering certain treatments.

Close communication with the healthcare professionals involved in the care of OAPs—not only in medicine but also in nutrition, psychology, physical therapy, and other disciplines—is crucial. Understanding their adherence to both pharmacological and non-pharmacological treatments serves as a foundation for achieving successful recovery from dental procedures.

Raising Awareness Among Dental and General Healthcare Professionals

The GD differs from other dental professionals in that they must be familiar with and work closely with the support networks of OAPs) These networks are composed of their families and the various healthcare professionals involved in their care. The GD should promote the idea that older adult patients with additional physical, mental, or medical complications should be treated by specialists in geriatric dentistry, just as pediatric dentists treat younger patients.

The dental profession as a whole must increase awareness of complex medical conditions such as HAE, ensuring that all dental personnel working with these patients possess the necessary knowledge to provide appropriate care and promote patient comfort and satisfaction.

To achieve this, effective pain management and patient reassurance are essential, along with a multidisciplinary approach to managing potential complications that may arise during treatments required by OAPs with HAE.

It is also necessary to conduct analyses and studies on the risks that specific dental procedures may pose in triggering HAEA, enabling professionals to be better prepared and more confident regarding the effects of certain treatments.

At the same time, this provides patients with reassurance that specialists are well-informed and that nothing is left to chance. This process can begin with inferential analyses, which will open the door to gradually offering better evidence-based care for these patients.

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Conclusions

In older adult patients with HAE, it is essential to be meticulous about factors such as the history of HAE attacks, their triggers and consequences, comorbidities, polypharmacy and its side effects, drug interactions, the loss of physical and cognitive function, and the financial investment in the patient's healthcare.

Dental treatment for patients with HAE requires a comprehensive and multidisciplinary approach that addresses both specific dental needs and the underlying medical conditions. A thorough assessment of the patient's medical and dental history is essential, as well as effective communication with other healthcare professionals involved in their care. Emphasis should be placed on prevention and on selecting non-invasive dental treatments whenever possible. Patient education is a key component in promoting long-term oral health and improving the patient's quality of life.

Each patient with HAE is unique and requires an individualized approach to dental care. Geriatric dentists must take the lead in managing these patients, always striving for comprehensive, high-quality care to achieve optimal health outcomes within the challenging context of aging and chronic disease.

Author contribution statement:
Conceptualization and design: CL, SC
Literature review: CL
Methodology and Validation: SC
Formal analysis: CL, SC
Investigation and data collection: CL, SC
Resources: CL, SC
Data analysis and interpretation: CL, SC
Writing-original draft preparation: CL, SC
Writing-review & editing: CL, SC
Supervision: SC
Project administration: CL, SC

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