Recombinant Human C1 Esterase Inhibitor as Short-Term Prophylaxis for Dental Procedures in Patients With Angioedema: A Case Series

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BACKGROUND

- Hereditary angioedema (HAE) due to functional C1 esterase inhibitor deficiency (C1-INH-HAE) is characterized by recurrent episodes of painful and often disabling swelling in subcutaneous and/or submucosal tissues¹
- C1-INH-HAE attacks are generally unpredictable, but triggers for an attack can include having a dental or medical procedure (eg, surgery), other trauma, or stress^{1,2}
- A pre-emptive management plan for patients undergoing these types of situations may reduce the risk of C1-INH-HAE attacks²
- Recommendations include administration of short-term prophylaxis in patients with C1-INH-HAE^{2,3}; although data are lacking, C1 esterase inhibitor (C1-INH) concentrate is recommended prior to all dental and medical procedures^{2,3}
- Recombinant human C1-INH (rhC1-INH) is a C1-INH concentrate indicated in the United States and European Union for the treatment of acute attacks in adolescents and adults with hereditary angioedema, and several studies have demonstrated that rhC1-INH is efficacious and well tolerated⁴⁻⁸
- rhC1-INH has also been studied in a phase 2 trial as long-term prophylaxis in patients with frequent attacks of C1-INH-HAE⁹
- In an analysis of 70 procedures (eg, dental, surgical, endoscopy) in which rhC1-INH short-term prophylaxis was administered (median, 60 min prior), 97.1% were HAE attack-free during the first 2 days postprocedure¹⁰
- Additional data are needed on the efficacy and safety of rhC1-INH as short-term prophylaxis

AIM

 To evaluate rhC1-INH as short-term prophylaxis prior to dental procedures in patients with non-histaminergic angioedema (eg, C1-INH-HAE)

METHODS

 In this retrospective study, patients diagnosed with angioedema due to C1-INH deficiency from Europe and the United States received rhC1-INH prior to dental procedures

- Patients from this study population who were not receiving long-term prophylaxis and had a dental procedure conducted without short-term prophylaxis were included in a self-control group and these procedures were included in the control analyses
- Angioedema attacks were recorded through 2 days and >2 to 7 days post-procedure

RESULTS

- 29 patients (**Table 1**) were treated for 37 dental procedures
- Most patients (89.7%) had type I C1-INH-HAE
- 5 (17.2%) patients (9 of 37 [24.3%] dental procedures) were receiving long-term prophylaxis with either danazol or tranexamic acid

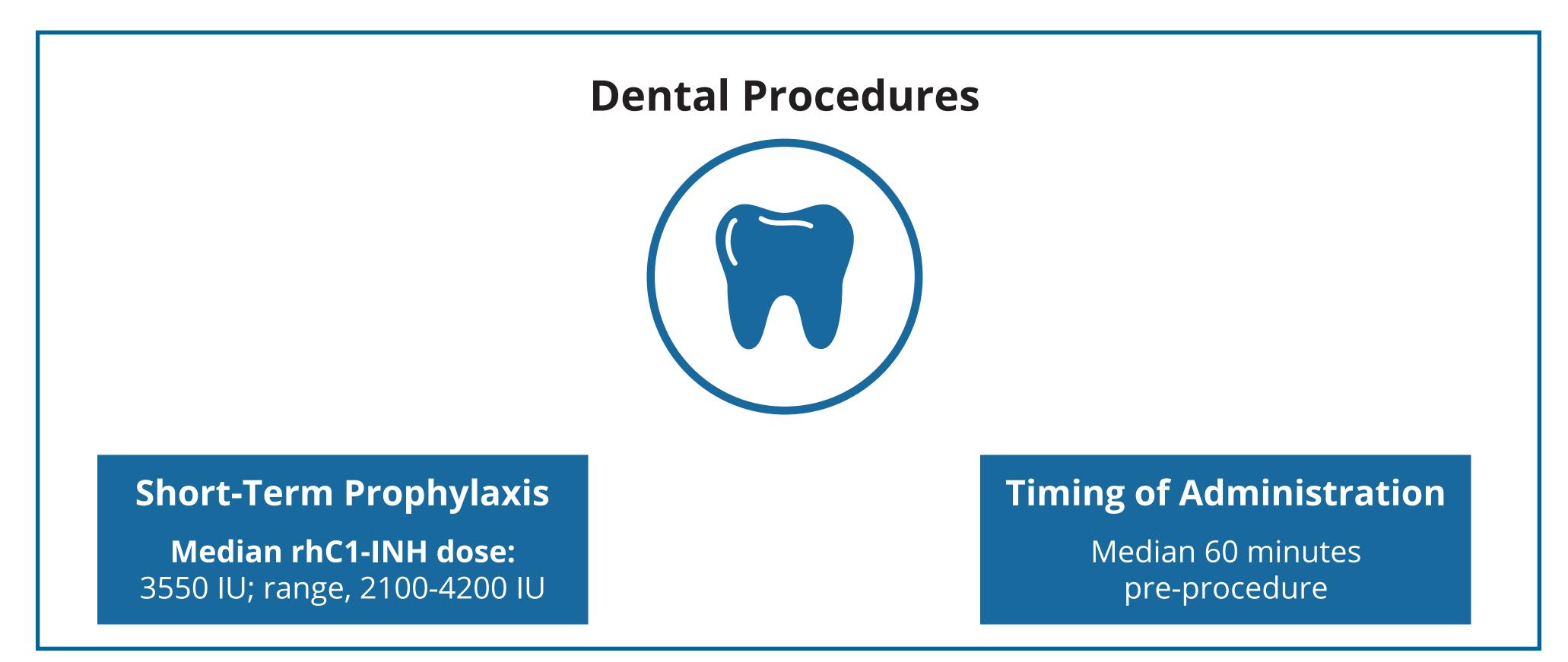
Table 1. Demographics and Baseline Characteristics

Parameter	Patients (N=29)
Age, y, median (range)	44 (17.5-73.1)
Female, n (%)	21 (72.4)
Weight, kg, median (range)	74.0 (50-119)
C1-INH-HAE type, n (%)	28 (96.6)
Type I	26 (89.7)
Type II	2 (6.9)
C1-INH-AAE, n (%)	1 (3.4)
C1-INH-HAE attacks/y, median (range)	17 (0-90)
Patients on long-term prophylaxis, n (%)	5 (17.2)
Danazol	4 (13.8)
Tranexamic acid	1 (3.4)

C1-INH-AAE = acquired angioedema due to acquired C1 esterase inhibitor deficiency; C1-INH-HAE = hereditary angioedema due to functional C1 esterase inhibitor deficiency.

- More than half (62.2%) of the 37 procedures involved dental extractions; other dental procedures included abscess draining, root canal, teeth cleaning, dental impaction, and dental veneer procedure
- A median rhC1-INH prophylactic dose of 3550 IU was administered a median of 60 minutes prior to a dental procedure (Figure 1)
- Twenty-five (67.6%) of the 37 dental procedures had rhC1-INH administered 30 to 60 minutes pre-procedure

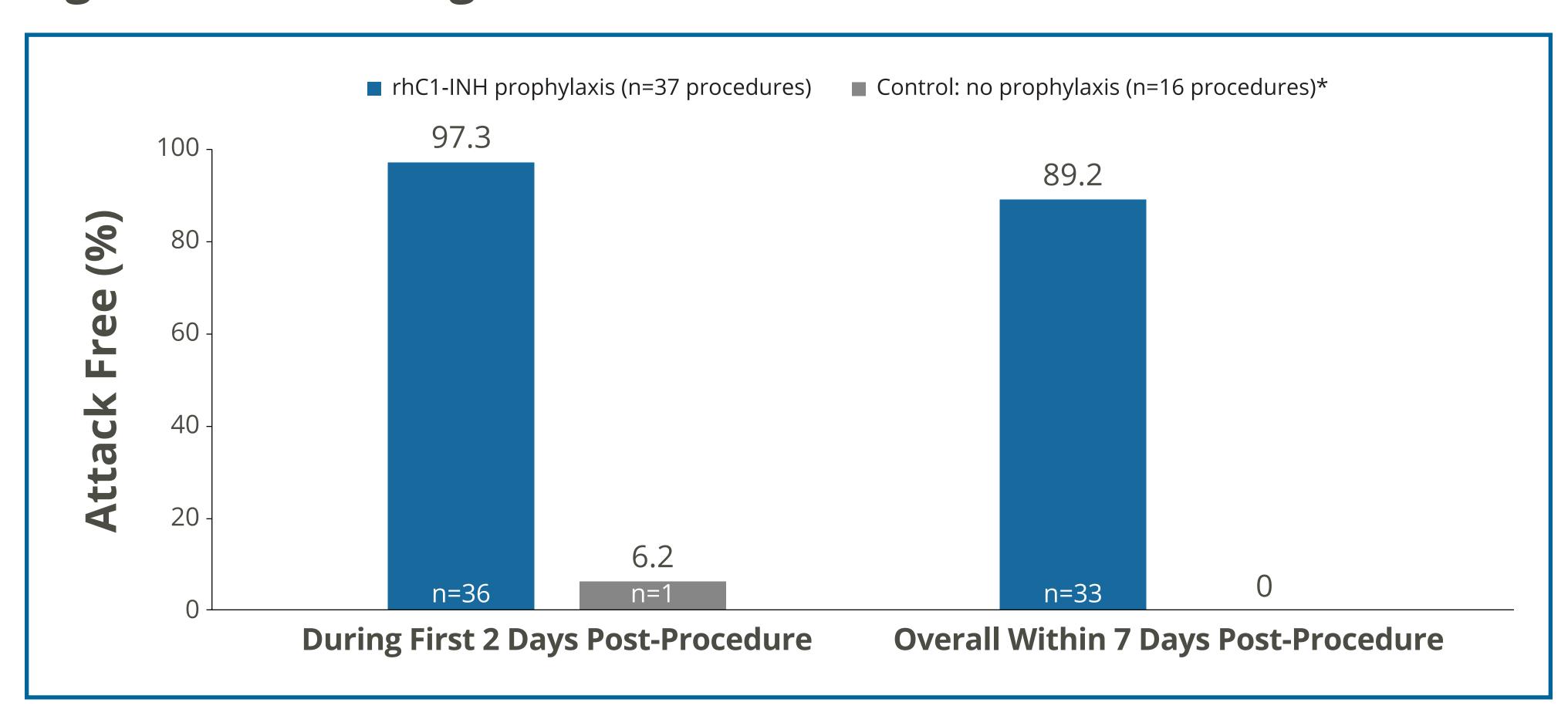
Figure 1. Median rhC1-INH Prophylactic Dose and Timing of Administration



rhC1-INH = recombinant human C1 esterase inhibitor.

- 97.3% (36/37) of the dental procedures remained attack free within 2 days post-procedure in the rhC1-INH group compared with 6.2% (1/16) of the dental procedures in the self-control group (**Figure 2**)
- For the 1 attack occurring within 2 days post-procedure in the rhC1-INH group, rhC1-INH (4200 IU; 37.5 IU/kg) was administered 230 minutes pre-procedure; the patient experienced mild knee edema and required no treatment

Figure 2. Percentage of Dental Procedures Attack Free



*Self-control group in which patients did not receive long-term or short-term prophylaxis. rhC1-INH = recombinant human C1 esterase inhibitor.

- During >2 to 7 days post-procedure, 3 attacks were observed in the rhC1-INH group (91.9%; 34/37) and 1 attack occurred in the self-control group (the only procedure that did not have an attack occur within the first 2 days)
- Thus, within 7 days post-procedure, 89.2% (33/37) of dental procedures remained attack free in the rhC1-INH group compared with none of the 16 dental procedures in the self-control group (**Figure 2**)
- No adverse events were reported

CONCLUSION

 Short-term prophylaxis with rhC1-INH, administered within ~60 minutes before a dental procedure, was efficacious and safe in adults and reduced the risk of an attack post-procedure

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