Prevalence of hereditary angioedema with normal C1-inhibitor (nC1-HAE) in the United States: Results from a nationwide survey of HAE-treating physicians

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While patients with nC1-HAE require similar care to those with C1INH-HAE (type I and II), the population prevalence of this condition is unknown

This study aimed to estimate the prevalence of nC1-HAE in the US based on physician-level prescription data and responses to an internet-based survey

Physicians were combined with physician assistant and/or their nurse practitioner, leaving 931 providers

Objectives

Conduct an epidemiologic assessment of nC1-HAE

Estimate the average number of HAE patients in treating physicians’ practices (in total and by subtype)

Project practice-level estimates to national-level estimates with consideration for practice variability

Sampling frame

IQVIA Xponent Prescriber Data
- Sample: 974 prescriber records with 11,924 prescriptions, from May 2019 to April 2020
- Market basket: Berinert, Cinryze, Ruconest, Haegarda, Firazyr, Kalbitor, Takhzyro

Physicians were combined with physician assistant and/or their nurse practitioner, leaving 931 providers

Survey Screening criteria

Screening criteria
- Board certified
- In practice <35 years
- Personally treated ≥5 HAE patients in the past 12 months
- Treated ≥1 patient with nC1-HAE in the past 12 months

IRB waiver
- IRB waiver granted in accordance with 45 CFR 46.104(d)(2)
  Date: June 8, 2020 (Advarr)

Day 628

Results

142 of 931 (15.3%) surveys were returned

There were 113 complete survey responses after removing those without national physician identifier and those with multiple survey screening results.

The ratio of annual prescriptions to total reported HAE patients (all types) for the 113 responses was:
- Mean: 2.4
- Median: 1.5 (25%: 0.5; 75%: 2.7)
- Range: 0.07–23.4

113 prescribers contributed information to the estimation of nC1-HAE prevalence

Prescribers

<table>
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<tr>
<th>Decile</th>
<th>Physician count</th>
<th>% physicians by decile</th>
<th>Average TKA/physician</th>
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<tr>
<td>1</td>
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<td>51.0</td>
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<tr>
<td>Total</td>
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<td></td>
<td>198.9</td>
</tr>
</tbody>
</table>

Ninety (<10%) prescribers accounted for 50% of prescriptions

Representativeness

Providers with nC1-HAE patients were specialists in allergy/immunology and half were in private group practice

Bias

15 patients had a large influence on the results (>1% change in the HAE patient total when removed)
- Few prescriptions per patient
- Pharmacies not tracked by IQVIA

32 “outlier” providers with prescription counts per patient of <0.5 or >7.0 were re-assigned
- Correspond to <25% and >95% of the distribution of the prescription/patient ratio
- Re-assigned to achieve a mean prescription/patient ratio similar to the non-outlier providers (2.2 prescriptions/patient)

Conclusions

Fifteen providers had a large influence on the results (>1% change in the HAE patient total when removed)

Patients with nC1-HAE represent a more sizeable population of patients with HAE in the United States than previously suspected

More studies need to be conducted to further refine the epidemiology of nC1-HAE in the United States and to assess unmet needs in this patient population

*Base: 331,449,281 as per 2020 census

The estimated prevalence for nC1-HAE was 0.44 per 100,000, accounting for 16.4%–22.7% of the total HAE population