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The SQUARE Study Design: A Multi-Centric, Non-Interventional Study to Evaluate the Impact of Erenumab on Quality of Life in a Real-World Population With Migraine

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INTRODUCTION

- Erenumab (AMG334; Aimovig®) is a fully human monoclonal antibody specifically designed[1] for the preventive treatment of migraine and has been used by over 250,000 patients[2] since it was first made available
- In pivotal trials, erenumab showed significant improvements in the frequency and burden of episodic and chronic migraine[3-5]. However, real-world evidence to complement these findings in a setting of routine medical care is lacking

OBJECTIVE

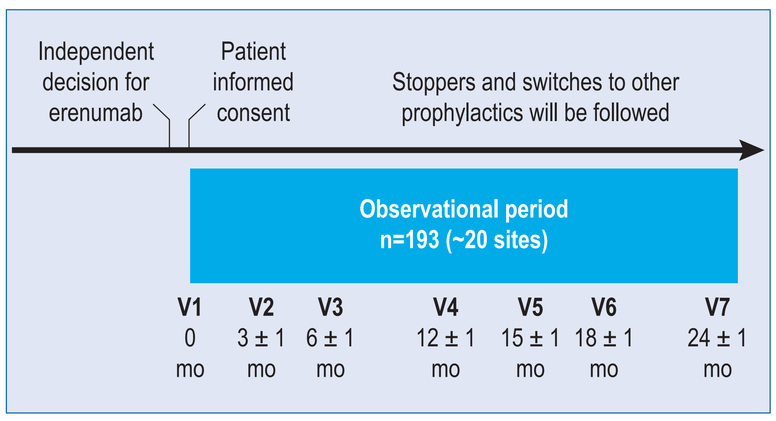
- To present the study design of the non-interventional SQUARE study (Swiss QUality of life and healthcare impact Assessment in a Real-world Erenumab treated migraine population, CAMG334ACH01) which aims to collect important real-world clinical data on the impact of erenumab on patient-reported quality of life, as well as treatment satisfaction and persistence in a real-world migraine population

METHODS

Study Design

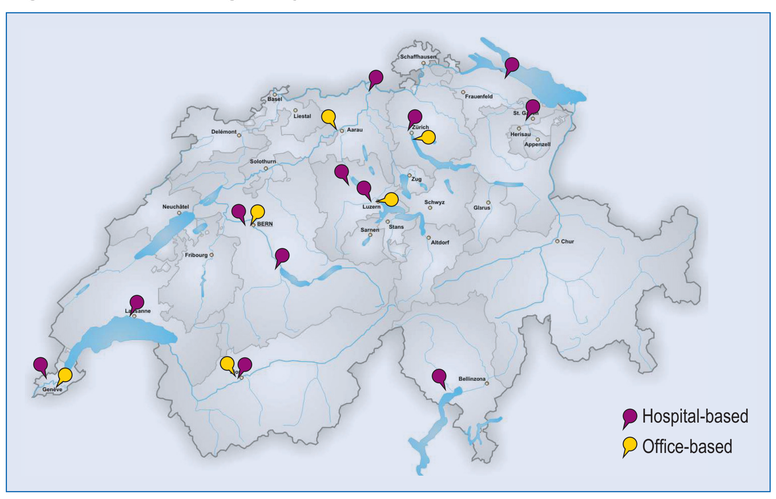
- SQUARE is a non-interventional study to observe the use of erenumab, in a post-marketing setting of 20 migraine clinics in Switzerland (**Figure 1**)

Figure 1. Study Design



- Both migraine care specialist centers and general neurologists in all geographical regions of Switzerland were included in the study in to obtain a representative sample of the whole migraine treatment landscape (**Figure 2**)

Figure 2. Participating study sites



- Data collection will be facilitated by offering automatic data transfer from the "Migraine Buddy" mobile application (**Figure 3**)
- The data of this study will be pooled with data from similar non-interventional studies of other European countries (umbrella protocol with aligned endpoints) and schedules

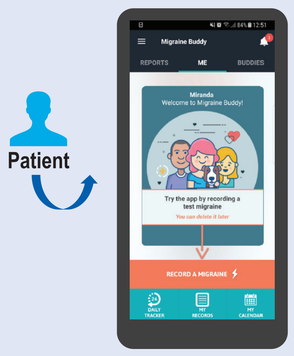
Inclusion criteria

- Adults with a diagnosis of migraine according to the International Classification of Headache Disorders (ICHD-3)[6]
- Written informed consent will be obtained from patients before participating in the study
- Decision that the patient will be initiated on erenumab in alignment with the Swiss label to be taken prior to enrollment
- Patient is willing and able to complete migraine diary during course of the study, and to complete PRO questionnaires

Exclusion criteria

- Use of investigational drugs during the study,
  - OR within 3 months before enrollment
  - OR within 5 half-lives of investigational drug before enrollment
  - OR until the expected pharmacodynamic effect has returned to baseline, whichever is longer
- Prior treatment with erenumab or any CGRP (receptor)-based therapy

Figure 3. Use of "Migraine Buddy" mobile application as an easy way to track migraine in a non-interventional study



Patient

Tracking via Migraine Buddy allows data collection on a day-to-day basis.

Collected data:
- Migraines
- Menstruation parameters
- Intensity
- Acute migraine-specific treatments

	Migraine Buddy	No Migraine Buddy
Monthly migraine days (general and menstrual)	Number and dates tracked	Only number tracked*
Acute migraine-specific medication days	Number and dates tracked	Only number tracked*
Resolution of data	Daily basis	Monthly basis
Data transfer	Automatic	Entry into eCRF

Additional research questions that can be addressed (examples):
- Time until response; time until re-activation upon discontinuation
- Dynamic changes between dosing intervals

*In the eCRF, only numbers per month (and not the exact dates) are entered to reduce the burden on sites.
Note that use of Migraine Buddy is encouraged, but optional. Monthly migraine days are also collected via eCRF for all patients, regardless of which migraine diary they use.

Sample size

- For within-group changes of HIT-6, a minimum important difference of −3.7 has been reported in the literature[7]. Based on the observed variability of HIT-6 in the BECOME[8] and STRIVE[3] studies, it has been calculated that a sample size of 77 patients with migraine is required for statistical analysis. Considering an expected drop-out rate of 60%, a total sample size of 193 patients will be recruited from 20 sites across all geographical regions of Switzerland

Primary endpoint

- Change of Headache Impact Test (HIT-6) scores after 6 months post initiation compared to baseline

Secondary endpoints

- Change of HIT-6, modified migraine disability assessment test (mMIDAS with a 1-month recall period) and Impact of Migraine on Partners and Adolescent Children (IMPAC) scores after 3, 12, 15, 18 and 24 months compared to baseline
- Total scores on TSQM-9 after 6 months
- Physician convenience/ practicality after 3, 6, 12, 15, 18 and 24 months
- Percentage of patients without permanent discontinuation of erenumab for any reason after 3, 6, 12, 15, 18 and 24 months
- Number of treatment days and total drug exposure within 24-months follow up
- Percentage of patients escalated and de-escalated between 70 mg and 140 mg of erenumab and the reason for the same
- Change in number of hospitalizations, ER visits and physician visits after 3, 6, 12, 15, 18 and 24 months compared to baseline
- Change in monthly migraine days and the achievement of at least 30%, 50%, 75% and 100% reduction after 3, 6, 12, 15, 18 and 24 months compared to baseline
- Change in menstrually-related migraine days, monthly acute migraine medication treatment days after 3, 6, 12, 15, 18 and 24 months compared to baseline
- Continued assessment of primary and secondary outcome measures after discontinuation of erenumab (permanent discontinuation of prophylaxis vs. re-initiation or erenumab vs. switch to other prophylaxis)

CONCLUSIONS

- This study is among the first designed studies to describe the impact of erenumab in a real-world setting
- The data of this study will be pooled with data from similar non-interventional studies of other European countries, allowing post-hoc data pooling and cross-comparison
- A digital solution using the "Migraine Buddy" mobile application has been implemented to gain higher-resolution migraine data while facilitating data entry and posing no additional burden on study sites
- Results from this endeavor will corroborate the body of evidence available for erenumab in medical practice
- The study is currently recruiting patients and primary results will be available in 2021

METHODS (Continued)

Statistical methods

- Primarily descriptive statistics will be used to evaluate the results
- All patients who receive at least one dose of erenumab and for whom subsequent documentation after baseline is available will be included in the evaluation

Limitations

- In Switzerland, Aimovig is reimbursed for migraine patients with 8 or more migraine days per month, with an episode duration of at least 4 hours and a documented diary over at least 3 months prior to treatment initiation. Aimovig treatment has to be discontinued if no reduction in migraine days is seen at 3 months after initiation, or if the reduction is <50% at 6 months after initiation.
- The primary endpoint was hence chosen for month 6 and the sample size adjusted to account for early drop-outs

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DISCLOSURES

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