Reversion From Chronic to Episodic Migraine and Effects on Patient-reported Outcomes Following Treatment With Erenumab: Post-hoc Analysis of the Randomised, 12-week, Double-blind DRAGON Study

Shuu-Jiun Wang[1], Byung-Kun Kim[2], Hebo Wang[3], Jiying Zhou[4], Qi Wan[5], Tingmin Yu[6], Yajun Lian[7], Michal Arkuszewski[8], Laurent Ecochard[8], Shihua Wen[9], Fangfang Yin[10], Zheng Li[10], **Wendy Su**[9], Shengyuan Yu[11]

[1]Neurological Institute, Taipei Veterans General Hospital, Taipei, Taiwan; [2]Nowon Eulji Medical Center, Eulji University School of Medicine, Seoul, Korea; [3]Hebei General Hospital, Shijiazhuang, China; [4]The First Affiliated Hospital of Chongqing Medical University, Chongqing, China; [5]Jiangsu Province Hospital, Nanjing, China; [6]The Second Hospital of Jilin University, Changchun, China; [7]The First Affiliated Hospital of Zhengzhou University, Zhengzhou, China; [8]Novartis Pharma AG, Basel, Switzerland; [9]Novartis Pharmaceutical Corporation, East Hanover, NJ, USA; [10]China Novartis Institutes for Biomedical Research Co., Ltd., Shanghai, China; [11]Chinese PLA General Hospital, Beijing, China

Introduction

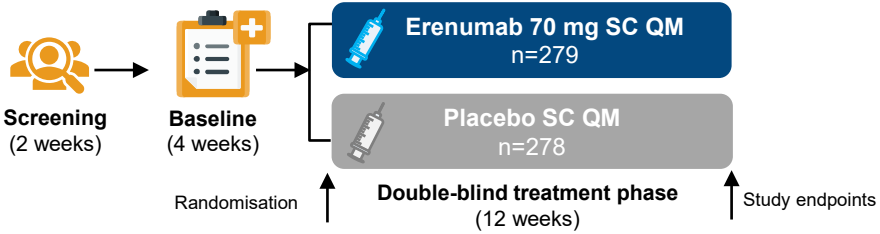
- Erenumab is fully human monoclonal antibody blocking calcitonin gene-related peptide receptor and is the first FDA- and EMA-approved medication for migraine prevention in adults[1]
- The efficacy of erenumab in reducing migraine frequency was confirmed in patients with chronic migraine (CM) and episodic migraine (EM) from Asia in two 12-week, randomised, placebo-controlled, phase 3 studies, namely DRAGON (NCT03867201)[2] and EMPOwER (NCT03333109)[3], respectively
- Increasing migraine burden related to migraine chronification remains to be of significant concern; thus, the possibility to revert from CM to EM represents a valuable clinical goal for physicians

Objective

This post-hoc analysis of the DRAGON study assessed the effect of erenumab treatment on reversion from CM to EM in the overall population and in the subgroups defined by baseline clinical and demographic characteristics, and in relation to migraine-related disability and its impact on patient's life as assessed by patient-reported outcomes (PROs) over the 12 weeks of treatment

Methods

- Adult patients (N=557) with CM (defined as ≥15 headache days per month, of which ≥8 were migraine days, in each of prior 3 months) were randomised (1:1) to monthly subcutaneous erenumab 70 mg or placebo
- Reversion to EM was defined as patients with <45 monthly headache days over the 12-week double-blind treatment phase[4]
- PROs included Headache Impact Test-6 (HIT-6™), Migraine Physical Function Impact Diary (MPFID) and modified Migraine Disability Assessment (mMIDAS)
- The change in MIDAS disability category was assessed, with converted mMIDAS scores calculated as a sum of all 3-monthly assessments



For patients not entering the open-label treatment phase, the safety follow-up visit occurred 12 weeks after the last dose of the double-blind treatment phase. In the selected countries or regions, patients completing the double-blind treatment phase on the study drug were eligible to participate in the open-label treatment phase (until launch of erenumab in the respective country or region).

1. Shi L, et al. *J Pharmacol Exp Ther*. 2016;356:223–231; **2.** ClinicalTrials.gov Identifier: NCT03867201. Accessed July 28, 2022. https://clinicaltrials.gov/ct2/show/NCT03867201; **3.** Wang SJ, et al. *Cephalalgia*. 2021;41(13):1285–1297; **4.** Lipton RB, et al. *Cephalalgia*. 2021;41(1):6–16.

NOVARTIS AMGEN

Greater proportion of patients on erenumab reverted from CM to EM at Week 12 across all subgroups

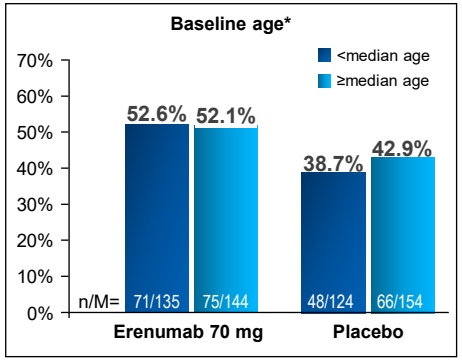
A greater proportion of patients treated with erenumab had a

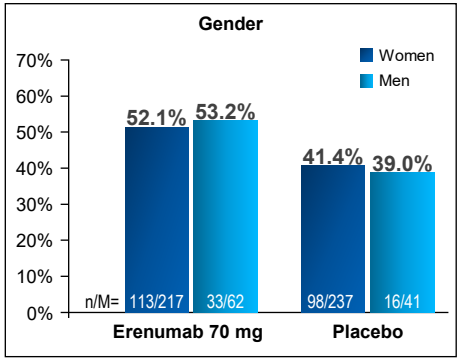
higher chance

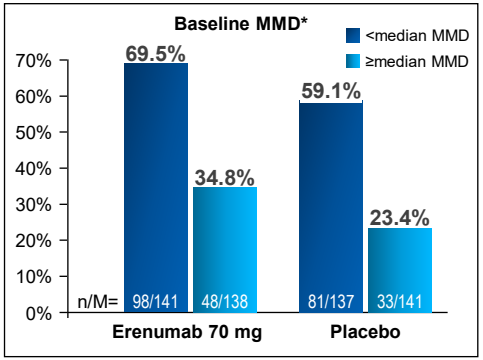
of reverting from CM to EM after 12 weeks of treatment than those on placebo

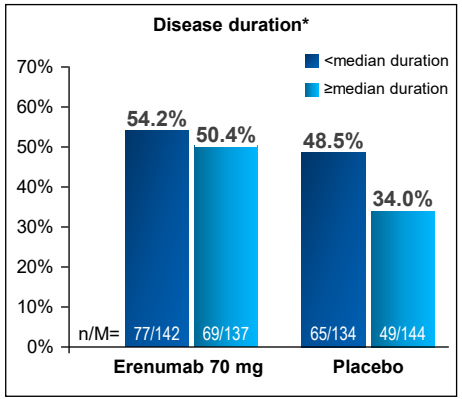
52.3% vs 41.0%
OR 1.59
95% CI: 1.13, 2.23
p=0.007

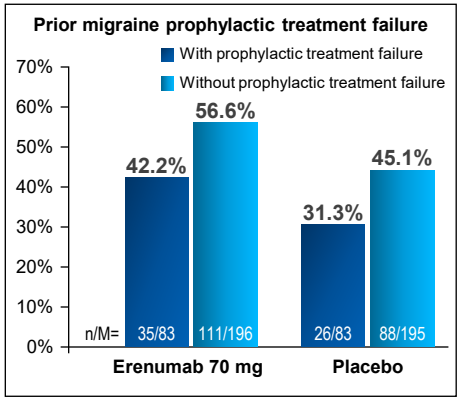
This was consistent across all subgroups

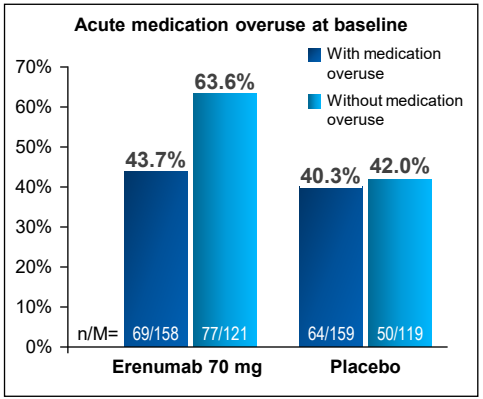












*Median age was 41.0 years, median MMD was 19.0 days and median disease duration was 16.0 years.
The value of the stratification factor (prior prophylactic migraine treatment failure and medication overuse) used here is the one used for randomisation. For patients who continued to open-label treatment, the cut-off is end of treatment. For patients who entered the safety follow-up after double-blind treatment, the cut-off is 11 August 2021 or end of study, whichever was first.
CI, confidence interval; CM, chronic migraine; EM, episodic migraine; M, total number of patients within the subgroup level in the treatment group; MMD, monthly migraine day; n, number of patients who responded; OR, odds ratio.

NOVARTIS AMGEN

Greater improvement in PROs in patients who reverted to EM at Week 12

A **greater improvement** was reported across the range of PROs assessed in patients who reverted from CM to EM

- **Greater reductions in HIT-6** and **mMIDAS scores***
- **Improvements** in monthly days with physical impairment and everyday activities assessed by **MPFID**
- **Higher** proportion of patients had improved in **MIDAS disability category**

Change from baseline in	Erenumab 70 mg				Placebo			
	Reversion to EM		No reversion to EM		Reversion to EM		No reversion to EM	
	n	Mean (SE)	n	Mean (SE)	n	Mean (SE)	n	Mean (SE)
HIT-6	140	−9.5 (0.65)	123	−5.1 (0.58)	114	−8.9 (0.72)	154	−4.9 (0.52)
mMIDAS	140	−22.1 (1.24)	123	−6.3 (1.81)	114	−19.9 (1.38)	154	−7.9 (1.62)
MPFID-PI	146	−5.9 (0.36)	124	−1.9 (0.61)	114	−5.4 (0.41)	160	−1.0 (0.54)
MPFID-EA	146	−7.9 (0.48)	124	−3.4 (0.65)	114	−7.1 (0.55)	160	−3.2 (0.58)
Status at Week 12	**n**	**M (%)**	**n**	**M (%)**	**n**	**M (%)**	**n**	**M (%)**
Improved in MIDAS disability category	146	46 (31.5)	133	33 (24.8)	114	31 (27.2)	164	19 (11.6)

Conclusions

- **Results from this post-hoc analysis demonstrate that patients treated with erenumab 70 mg have a higher chance of reverting from CM to EM compared to those who received placebo, which is consistent throughout different subgroups of patients with CM in Asia**
- **Reversion to EM is associated with improvement in functional outcomes as measured by HIT-6, MIDAS, and MPFID**

*Since mMIDAS scoring is based on a 1-month recall period, the original MIDAS disability categories were based on converted mMIDAS scores, calculated as the sum of all 3-monthly assessments, representing a 3-month recall period. Change to lower disability category after baseline is considered an improvement. MPFID is presented as change from baseline in monthly days with physical impairment or impact on everyday activities at Week 12 (response of 3, 4, or 5 on any of the 5 daily items). Patients with missing data are counted in the 'not reverting to EM' subpopulation. For patients who continued to the open-label treatment phase, the cut-off is end of treatment. For patients who entered safety follow-up after the double-blind treatment phase, the cut-off was 11 August 2021 or end of study, whichever was first.

CM, chronic migraine; EA, everyday activities; EM, episodic migraine; HIT-6, Headache Impact Test; M, number of patients with changes in the MIDAS score; mMIDAS, modified Migraine Disability Assessment; MPFID, Migraine Physical Function Impact Diary; n, number of patients with non-missing value for continuous endpoint (HIT-6, mMIDAS, MPFID) and number of patients in the Full Analysis Set for category endpoint (MIDAS); PI, physical impairment; PRO, patient-reported outcome; SE, standard error.

Disclosures

Shuu-Jiun Wang has received personal compensation for serving on a Scientific Advisory board for Eli Lilly and Novartis. He has received personal compensation for serving as a speaker or moderator for AbbVie, Biogen, Eisai, and Pfizer, Taiwan. The institution of Prof. Wang has received research support from Brain Research Center at National Yang Ming Chiao Tung University, from The Featured Areas Research Center Program within the framework of the Higher Education Sprout Project by the Ministry of Education (MOE) in Taiwan, Eli Lilly and Novartis. **Byung-Kun Kim** has received personal compensation for serving on a Scientific Advisory board for Lundbeck Korea and Novartis. He has received personal compensation for serving as a speaker or moderator for Allergan Korea, Lilly Korea, Teva Korea, GSK Korea, Lundbeck Korea and SK pharm. **Hebo Wang, Jiying Zhou, Qi Wan, Tingmin Yu** and **Yajun Lian** have declared that there is no conflict of interest. **Michal Arkuszewski, Laurent Ecochard, Shihua Wen** and **Wendy Su** are employees of and hold stocks in Novartis. **Fangfang Yin** and **Zheng Li** are employees of China Novartis Institutes for Biomedical Research Co Ltd. **Shengyuan Yu** has declared that there is no conflict of interest.
Funding source: This study is supported by Novartis Pharma AG, Basel, Switzerland. Erenumab is co-developed by Novartis and Amgen.
Acknowledgments: Writing support was provided by Radha Gupta (Novartis Healthcare Pvt. Ltd., Hyderabad, India). The final responsibility for the content lies with the authors.

Scan to download a copy of this poster

Poster Presented at 19th Migraine Trust International Symposium (MTIS) 2022, Sep 8-11, 2022