Clinical burden of classical homocystinuria in the United States: a retrospective analysis of Optum Market Clarity

Mahim Jain¹, Lionel Pinto², Kamlesh M. Thakker³, Mehul Shah², Andrew Rava⁴, Colette Ndiba-Markey⁴, Diana T. Amari⁴

¹Kennedy Krieger Institute, Johns Hopkins Medicine, Baltimore, MD, USA, ²Travere Therapeutics, Inc, San Diego, CA, USA, ³Notting Hill Consulting LLC, Celebration, FL, USA, ⁴Genesis Research, Hoboken, NJ, USA

Background: Classical homocystinuria (HCU) is a rare genetic disorder characterized by elevated total homocysteine (tHcy) levels and a heterogeneous clinical presentation. This study aimed to describe clinical outcomes by tHcy levels in patients with HCU.

Case Study/Methods: This was a retrospective analysis using Optum’s de-identified Market Clarity Data (2007-2021) and proprietary Natural Language Processed (NLP) Data. Expert clinical input was incorporated to develop a patient identification algorithm. Patients were included if they had ≥1 ICD-10 diagnosis code for HCU (E72.11) or HCU-related terms in the NLP dataset. In patients with tHcy <50 μM, those with secondary causes of elevated tHcy were excluded unless they had other clinical presentations indicative of HCU. Major clinical events were defined as ≥1 condition-related emergency department or outpatient visit, or inpatient admission. tHcy levels were defined using the highest tHcy value at any time during the study period.

Results: 601 patients with HCU met the inclusion criteria. Mean age was 50 years, 46.1% female, and 79.0% White. Overall, the clinical burden of HCU was high (mean highest tHcy at any time: 68.4 μM) with ~50% experiencing at least one major clinical event and ~14% experiencing ≥1 events over a median (Q1, Q3) follow-up of 29.2 (14.2, 45.5) months. Thrombotic/thromboembolic events (30.9%) were most common, followed by skeletal (16.6%) and ocular (10.5%). Clinical event rates were generally higher in patients with tHcy ≥50 μM vs. <50 μM (thrombotic/thromboembolic 38.4% vs. 22.3% p<0.05, skeletal 18.3% vs. 14.7% p=0.273, ocular 11.1% vs. 9.7% p=0.596, neurological 10.5% vs. 5.8% p<0.05, mortality 8.4% vs. 2.5% p<0.05).

Discussion/Conclusion: Clinical burden of HCU is substantial, particularly in those with total homocysteine levels above 50 μM. These data suggest that treatments focused on lowering homocysteine levels are needed to reduce significant clinical events for patients with HCU.

1,995/2000 characters including spaces