Mecasermin (rh-IGF-1) treatment for Rett Syndrome is safe and well-tolerated

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The results from Boston Children's Hospital's Phase 1 human clinical trial in Rett syndrome came out today. A team of investigators successfully completed a Phase 1 clinical trial using mecasermin [recombinant human insulin-like growth factor 1 (IGF-1)], showing proof-of-principle that treatments like IGF-1 which are based on the neurobiology of Rett syndrome, are possible.

The study deemed that IGF-1 is safe and well tolerated in girls diagnosed with Rett syndrome, and the data also suggests that certain breathing and behavioral symptoms associated with Rett syndrome were ameliorated after IGF-1 treatment. The completed Phase 1 trial and the now current Phase 2 study are funded in part by the International Rett Syndrome Foundation (IRSF) to Dr. Omar Khwaja (first author on the publication) who initially led the Phase 1 study and to Dr. Walter Kaufmann (corresponding author) who completed the Phase 1 study and is leading the Phase 2 study at Boston Children's Hospital. Kathryn Kissam, IRSF Board member said, "Our sincerest gratitude goes to Dr. Khwaja and Dr. Kaufmann for their true dedication to find treatments for our girls and women today."

The article, titled "Safety, pharmacokinetics, and preliminary assessment of efficacy of mecasermin (rhIGF-1) for the treatment of Rett syndrome"' in the scientific journal *Proceedings of the National Academy of Sciences* (*PNAS*) describes how the team assessed IGF-1 treatment in 12 girls with MECP2 mutations (9 with a clinical diagnosis of Rett syndrome). IGF-1 is approved by the Food and Drug Administration (FDA) for treatment of growth failure in children with severe primary IGF-1 deficiency. Because IGF-1 has not previously been tested on a pediatric population with Rett syndrome, this Phase 1 was designed first and foremost for safety.

Dr. Kaufmann now has an ongoing Phase 2 trial of IGF-1 treatment that intends to replicate the promising beneficial effects on behavior and breathing, and further investigate other potential improvements. The Phase 2 trial will include 30 children with Rett syndrome between the ages of 2 to 10 years old who are in the "stable" stage of the disease. The Phase 2 trial is currently at its midpoint and, if successful, it will be followed by a larger replication Phase 3 study. The latter is a requirement for FDA approval of IGF-1 indication for RTT. Altogether, these IGF-1 trials will open the path for the testing of additional potential treatments for RTT.

IRSF anticipates that Rett syndrome research momentum will accelerate towards more additional clinical trials in the near future. Whether support for expansion of the current trials to Phase 3 or for implementation of Phase 1 trials for new drug candidates will be needed, IRSF is at the forefront of clinical research for Rett syndrome. Dr. Steven Kaminsky, IRSF Chief Science Officer said, "These clinical research studies are critical to developing pharmacologic treatments for the patients with Rett syndrome now. These studies combined with forward looking abilitation therapies will provide avenues to change the quality of life for those suffering with Rett syndrome and their families."

"With hope to quickly bring treatments to our girls, IRSF is actively working on a campaign to fund additional human clinical trials including the possible expansion of current studies to Phase 3," said Rajat Shah, IRSF Chairman of the Board. "Thank you to all the girls, families, and donors who supported these Phase 1 and Phase 2 clinical trials and IRSF."

More information: Safety, pharmacokinetics, and preliminary assessment of efficacy of mecasermin (recombinant human IGF1) for the treatment of Rett syndrome, www.pnas.org/cgi/doi/10.1073/pnas.1311141111

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