Preclinical Pilot Study Results of 24-hour Apomorphine Subcutaneous Infusion Delivered via the h-Patch™ Wearable Device

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Abstract

Treatment of advanced Parkinson's disease (PD) remains challenging, with fluctuations in motor status often resulting in patients becoming severely handicapped[1]. The short-acting dopamine D1/D2 receptor agonist, Apomorphine (Apo), was the first dopamine receptor agonist used to treat PD[2]. The magnitude and pattern of the motor response to single dose of subcutaneously administered Apo is qualitatively comparable to that of oral levodopa, however side effects (nausea, vomiting, etc.) can be problematic[3]. Close to a dozen clinical studies have shown subcutaneous Apo infusions are successful in aborting 'off' periods, reducing dyskinesias and improving PD motor scores with the added benefit of a substantial levodopa-sparing effect[2]. However, bulky infusion pumps requiring delivery of relatively large volumes remain a barrier to development of therapeutic products that are patient (and caregiver) friendly. We investigated the pharmacokinetics (PK) of Apo delivered over a single 24-hour period using the wearable h-Patch™ subcutaneous infusion device in dogs. Apo (10mg) was delivered with PK evaluated at time points to 48h from the start of infusion. Apo levels were detectable in blood detected within two hours of the beginning of infusion and gradually dropped off after completion of h-Patch™ infusion (24h). With additional work on a concentrated Apo solution and modest expansion of the h-Patch reservoir, the wearable h-Patch represents a patient friendly subcutaneous delivery mechanism for Apo providing the benefits of a full 24h infusion of low dose Apo to eliminate 'off' periods and improve motor status without tolerability issues seen with subcutaneous injections.

Recent Publications

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Biography

Jessica Barnes graduated from Worcester Polytechnic Institute with a B.S. in Biotechnology, and earned her PhD in Molecular Neuroscience from the University of Illinois at Urbana-Champaign. She was a fellow in the department of pediatric neuro-oncology at the Dana-Farber Cancer Institute and Children's Hospital Boston under the mentorship of Dr. Judah Folkman. Her roles have including CEO/Co-founder of the 20Lighter Program, Director of New Ventures at Access BridgeGap Ventures, Senior Science Officer at Summer Street Research Partners, and Vice President in MEDACorp at Leerink Swann. Additionally, she provides Business & Corporate Development consulting services to biotech & med device companies.

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Notes/Comments: