Long Acting Somatostatin Analogue (Lanreotide) therapy in Congenital Hyperinsulinism – Pharmacokinetics and long term follow-up study

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Background

- Congenital hyperinsulinism (CHI) causes severe hypoglycaemia in children.
- Diazoxide and daily octreotide injections are first and second-line of treatment for CHI respectively.
- Diazoxide can cause severe hypertrichosis resulting in parental anxiety and compliance issues.

Objective and hypotheses

- To evaluate the efficacy, safety and pharmacokinetics of long acting somatostatin analogue (Lanreotide) therapy in CHI patients.

Methods

- Patients >6 months of age either on high dose diazoxide (causing side effects), or daily octreotide were started on 30mg Lanreotide every 4-weeks.
- Children >3 years of age had Paediatric Quality of Life (PedsQL) with Strengths and Difficulties questionnaires (SDQ) pre- and 1-year post-Lanreotide.
- Plasma Lanreotide concentrations measured by radioimmunoassay (>3 years of age) were collected at times 0,+1,+2,+4,+24 and +96 hours post 1st dose and subsequently prior to each dose for 6 months.

Results

- 31 children were commenced on Lanreotide and 5 had to stop treatment. Out of 26 children, 18 were on daily octreotide and 8 on diazoxide.
- Pharmacokinetic data on 21 children showed highest median value (25th-75th interquartile range) of Lanreotide concentration was 14.93ng/ml (4.39-31.6) at +4 hours of 1st dose.
- The median values (25th-75th interquartile range) prior to 2nd, 3rd, 4th, 5th, 6th and 12th doses were 0.88ng/ml (0.66-1.32), 1.09ng/ml (0.89-1.35), 1.21ng/ml (0.87-1.49), 0.79ng/ml (0.67-1.55), 1.35ng/ml (1.19-1.86) and 1.44ng/ml (1.08-2.18) respectively.
- PedsQL showed significant change in total health and psychosocial score and significant reduction in overall stress in the SDQ after 1-year post-Lanreotide ($p<0.05$).

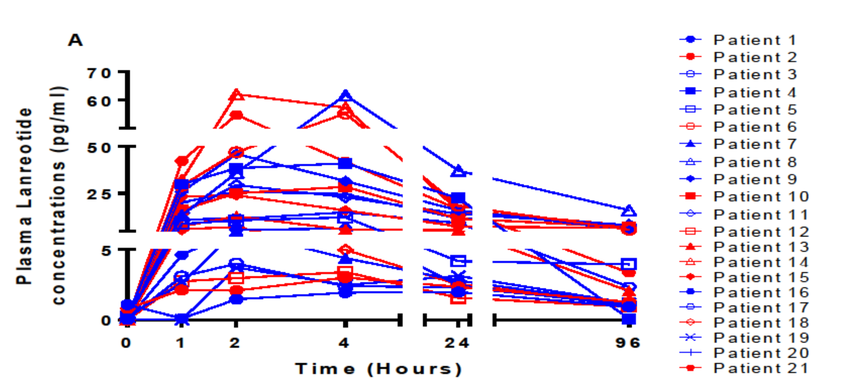

Figure 1A: Comparative plasma profile of Lanreotide following the first of a 4-weekly injection of Lanreotide Autogel® at 30 mg dose. Pharmacokinetic profile of Lanreotide in patients with CHI. Mean and standard error of mean (SEM) is plotted for individual CHI patients recruited.

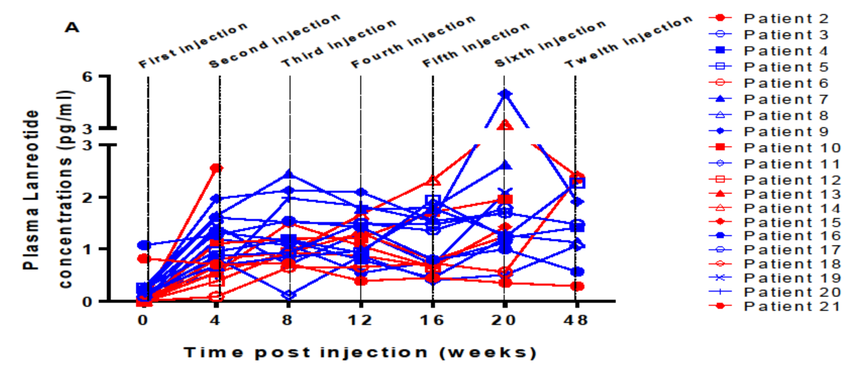

Figure 2A: Comparative plasma profile of Lanreotide prior to the first and then subsequent series of a 4-weekly injection of Lanreotide Autogel®. Pharmacokinetic profile of Lanreotide in patients with CHI. Mean and standard error of mean (SEM) is plotted for individual CHI patients recruited.

Conclusion

- This study demonstrates lanreotide is safe and effective alternative to diazoxide and octreotide therapy in CHI patients with a significant improvement in blood glucose control and quality of life.
- There is cumulative effect in Lanreotide concentration after each dose. Our 2.5 years follow-up data shows no adverse effects on growth.
- However also to note that not all patients with CHI will response to Lanreotide and they need close monitoring when assessing the response of Lanreotide.

Authors have nothing to disclose

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