Comparison of Administration Rates of MN-221 (bedoradrine), a Novel, Highly Selective β₂ Receptor Agonist in Patients with Stable Moderate to Severe Asthma

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Abstract

A single-blind, placebo-controlled trial in moderate to severe asthmatics demonstrated improved lung function and forced expiratory volume in 1 second with MN-221 infused i.v. at 2 different infusion rates. The infusion was stopped and the TEAE treated with no further treatment, and no clinically significant ECG or vital signs changes were observed.

Purpose

To compare the efficacy and safety of two different administration rates of MN-221 (bedoradrine sulfate), a novel, highly selective β₂ receptor agonist, in patients with stable moderate to severe asthma.

Methods

A total of 34 subjects (30 subjects with stable moderate-to-severe asthma and 4 subjects in the safety population) were included in the study. The subjects were randomized to receive two different administration rates of MN-221: 0.16 μg/min for 15 minutes followed by 15 μg/min for 105 minutes (2-hour infusion) or placebo. Safety assessments included adverse events (AEs) and vital signs. 

Results

At all time-points after the start of the infusion, the mean FEV₁ was greater than 20% higher in the 1-hour infusion group compared with the placebo group and was generally well tolerated by the asthmatic patients. In the 1-hour infusion group, the percentage of responders observed at time points 15 Minutes to 5 Hours was 71.8% higher compared with the placebo group. In the 1-hour infusion group, the percentage of responders observed at time points 15 Minutes to 5 Hours was 71.2% higher compared with the placebo group.

Conclusion

MN-221 may be used as a 1-hour infusion for the treatment of exacerbation of asthma, causing a delay in onset of action and was generally well tolerated by the asthmatic patients.

Conventional Pharmacotherapy for Acute Exacerbation of Asthma

- β₂ agonist agents are the mainstay of acute therapy in asthma
- The fastest route of administration is the fastest route of delivery for most patients
- Intravenous, nebulized, and inhaled (open-air patient, birds, etc.) may be used in this context
- β₂ agonist agents are generally well tolerated by the asthmatic patients
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Exacerbation of Asthma

- In acute asthma, β₂ agonist are the mainstay of treatment. It is important to note that β₂ agonist agents are generally well tolerated by the asthmatic patients.
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Study Entry and Procedures

- Breathing, placebo-controlled, single-blind, dose rate escalation study
- 17 subjects with moderate-to-severe stable asthma (FEV₁, ≥ 40% ≤ 75% predicted) at 4 sites
- Dose:
  - Infusion for 15 minutes + 8 grams for 105 minutes (2-hour infusion, total dose 1,125 μg or placebo)
  - Infusion for 15 minutes + 16 grams for 40 minutes (1-hour infusion, total dose 1,125 μg or placebo)
- Outcome measures: descriptive statistics only — FEV₁, PK, Safety

CLINICAL IMPLICATIONS

- MN-221 may be used as a 1-hour infusion for the treatment of exacerbation of asthma, causing a delay in onset of action and was generally well tolerated by the asthmatic patients.
- β₂ agonist agents are generally well tolerated by the asthmatic patients
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CONCLUSIONS

- MN-221 may be used as a 1-hour infusion for the treatment of exacerbation of asthma, causing a delay in onset of action and was generally well tolerated by the asthmatic patients.
- β₂ agonist agents are generally well tolerated by the asthmatic patients
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SAFETY DATA

- The infusion was stopped and the TEAE treated with no further treatment, and no clinically significant ECG or vital signs changes were observed.
- No cases of death or severe adverse events were reported.

Clinical implications

- MN-221 was generally well tolerated by the subjects.
- No cases of death or severe adverse events were reported.
- No clinically significant ECG or vital signs changes were observed.

Summary of Adverse Events

- No deaths or severe adverse events were reported.
- No cases of death or severe adverse events were reported.
- No clinically significant ECG or vital signs changes were observed.

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