Establishment of a Rat Model of Diarrhea Induced by Surufatinib

ENETS EUROPEAN NEUROENDOCRINE TUMOR SOCIETY

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BACKGROUND:

Surufatinib is a novel oral small-molecule TKI for the treatment of advanced neuroendocrine tumors. However, diarrhea is a common adverse event which seriously affects patients' quality of life and clinical efficacy. Currently, there are no available animal models to study the cause and treatment of surufatinib-related diarrhea.

AIM:

The purpose is to establish a rat model of surufatinib-induced diarrhea and to preliminarily investigate the pathological changes.

Figure 1 The feces of rats with diarrhea stained the perianal hair and even the legs.

Figure 2 Compared with normal stool, loose stool can form a circular stain on the filter paper.

MATERIALS AND METHODS:

- Surufatinib (a suspension formulated in 0.5% carboxymethyl cellulose) is formulated into three concentrations: 0.6%, 0.9%, and 1.1%.
- Forty rats (aged 6 to 8 weeks and weighting between 211g and 231g) were randomly divided into four groups. The control group was given 10 ml/kg of carboxymethyl cellulose by gavage daily, and experimental group was given three concentrations of surufatinib suspension daily, with doses of 60 mg/kg, 90 mg/kg, 110 mg/kg.

KEYWORDS:

Surufatinib, diarrhea, model, rat

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RESULTS:

- The rats in the control group had no diarrhea. And the diarrhea rates of rats in the experimental groups were 20% (60mg/kg group), 50% (90mg/kg group), and 80% (110mg/kg group).
- The plasma levels of DAO and D-lactate in the surufatinib highest dose group rats were significantly elevated compared to the other groups, suggesting a disruption in intestinal barrier function.
- Histopathological examination indicated that the damaged organ was the colon of rats.

CONCLUSION:

We established a rat model of surufatinib-induced diarrhea, the rate of diarrhea in rats can reach 80% at a dose of 110 mg/kg. It would be a useful tool for studying drug intervention of surufatinib-related diarrhea