

Short Review

Life Reversal Treatment for Commentary and Clinical Paralytic Poisoning: Implications

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Abstract

This article provides a detailed account of a successful treatment case involving a pufferfish poisoning patient, followed by an in-depth analysis and discussion based on this case study. Through retrospective examination of the treatment process, the paper summarizes key measures and lessons learned, aiming to provide clinicians with reference for managing pufferfish poisoning cases while improving treatment success rates. Additionally, it offers new perspectives and innovative approaches for advancing research in the field of pufferfish poisoning treatment.

Keywords: Commentary; Poisoning; Tetrodotoxin; Treatment

Introduction

Tetrodotoxin (TTX), a potent neurotoxin primarily found in pufferfish tissues like ovaries and livers, can cause rapid poisoning symptoms in humans after accidental ingestion. These include numbness in lips, limb weakness, and breathing difficulties, with severe cases potentially leading to death from respiratory paralysis and circulatory failure. Currently, there is no specific antidote available in clinical practice, and treatment mainly relies on comprehensive supportive care [1]. This article reports a successful case of life reversal in a patient who consumed three times the lethal dose of tetrodotoxin, along with an analysis of the treatment process.

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Case Study

The 53-year-old male patient was admitted to the hospital after experiencing numbness in his lips, nausea, and vomiting 30 minutes following pufferfish consumption. Upon admission, he remained conscious but exhibited slurred speech, impaired limb movement, rapid breathing, and a blood pressure of 198/95 mmHg. During treatment, the patient fell into a coma with loss of spontaneous breathing, decreased oxygen saturation, and cardiac arrest. Emergency medical protocols were immediately activated.

Therapy

Early processing

After admission, the patient was immediately given emesis, gastric lavage, and catharsis to remove toxins, aiming to reduce the amount of toxin absorption. Meanwhile, a venous channel was established to provide supportive treatment such as fluid replacement and diuresis to promote the excretion of toxins.

Respiratory support

Since the toxin can cause respiratory muscle paralysis, the patient rapidly developed respiratory depression symptoms. Tracheal intubation was performed immediately and connected to a ventilator to assist respiration, while drugs were used to stimulate respiration and blood pressure to maintain the patient's respiratory function.

Blood purification therapy

Considering the small molecular weight of tetrodotoxin, which can be removed through hemodialysis, blood perfusion and medicinal charcoal therapy should be initiated 4 hours after hospital admission when the patient's vital signs are relatively stable. The blood perfusion treatment lasts for 2 hours and is performed twice in total. During the treatment, the patient's vital signs and blood indicators should be closely monitored.

Symptomatic treatment

For symptomatic treatment including neurotrophic support and myocardial protection, we employ a combination of neostigmine with Traditional Chinese medicine (TCM) acupuncture at the Zusanli acupoint—a signature approach in TCM to mitigate toxin-induced damage to the nervous and cardiovascular systems [2]. Additionally, while using medications to stimulate gastrointestinal motility, we implement acupuncture therapy to enhance digestive function, effectively facilitating toxin elimination.

Condition improvement and recovery

Through the comprehensive treatment regimen, the patient's toxic symptoms gradually subsided. Five days after admission, consciousness progressively returned with spontaneous breathing and improved muscle strength. By the seventh day, the patient successfully completed extubation and regained normal spontaneous breathing. After nine

days of hospitalization, all vital signs normalized, and the patient was discharged following full recovery.

Discussion

The importance of early intervention

In this case, immediate measures including induced vomiting, gastric lavage, and catharsis were implemented upon hospital admission to effectively reduce toxin absorption. The innovative combination of acupoint injection therapy and acupuncture to enhance gastrointestinal motility provided critical time for subsequent treatment. Therefore, early intervention to remove toxins is essential for pufferfish poisoning patients to minimize toxin exposure. The patient in this case ingested a dose exceeding three times the lethal dose (1.5-2.0 mg TTX) [3], making prompt emergency treatment crucial in the morning.

The key role of respiratory support

Respiratory paralysis is one of the leading causes of death in pufferfish poisoning patients. The critical factor for saving lives lies in promptly performing tracheal intubation and providing mechanical ventilation support to maintain respiratory function. In this case, when the patient's breathing difficulties worsened, timely tracheal intubation and ventilator-assisted breathing were administered, which laid the foundation for subsequent treatment.

The value of blood purification therapy

Blood perfusion effectively removes tetrodotoxin from the bloodstream through adsorption, thereby reducing toxin levels. In this case, blood perfusion therapy was promptly initiated after the patient's vital signs stabilized, successfully eliminating toxins and accelerating recovery. However, the optimal timing and frequency of blood purification treatments still require further research to establish.

The need for comprehensive treatment

The treatment of paralytic fish poisoning requires comprehensive consideration of the patient's condition and implementation of multiple therapeutic approaches. In addition to the aforementioned methods, symptomatic and supportive care are equally crucial. Neurotrophic interventions and myocardial protection measures can mitigate toxin-induced damage to vital organs, thereby improving survival rates. Concurrently, enhanced nursing care and prevention of complications are key factors for successful treatment outcomes.

Conclusion

This case demonstrates the successful reversal of a pufferfish poisoning patient's condition through comprehensive treatment measures, providing invaluable clinical insights. The critical success

factors include early toxin removal, timely respiratory support, rational application of hemodialysis, and integrated symptomatic management. Future efforts should focus on advancing clinical research to optimize treatment protocols, thereby elevating the overall therapeutic standards for pufferfish poisoning cases.

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Author's Contribution

Wu M.X: Project administration, draw designs, writing original draft, writing review & editing. Nan XJ: Responsible for case summary. Li J.J.: Responsible for sorting out treatment norms and advantages. Nan XJ Review and modify the plan. Wu MX, Li JJ and Nan XJ contribute equally to the article.

Ethical Approval and Consent to participate

This study was approved by the Ethics Committee

The Authors Declare no Competing Interest

The author declares that there is no conflict of interest.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Availability of Supporting Data

Data openly available in a public repository.

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