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# Postoperative toxic epidermal necrolysis in gastric cancer: A case report and literature review

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**Abstract**

A 60-year-old male patient presented skin flushing all over the body, who was diagnosed with toxic epidermal necrolysis syndrome (TEN). According to the suggestions of multi-disciplinary team, the patient was discharged healthily with the comprehensive treatments, including fluid infusion, nutritional support, intravenous gamma globulin and strict skin care. And the follow-up was good. This article is going to summarized experience of this case and review related literature to provide reference for future treatment.

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**Abstract** A 60-year-old male patient presented skin flushing all over the body, who was diagnosed with toxic epidermal necrolysis syndrome (TEN). According to the suggestions of multi-disciplinary team, the patient was discharged healthily with the comprehensive treatments, including fluid infusion, nutritional support, intravenous gamma globulin and strict skin care. And the follow-up was good. This article is going to summarized experience of this case and review related literature to provide reference for future treatment.

**Keywords** Toxic epidermal necrolysis drug eruption; Perioperative period; Intravenous gamma globulin; Multi-disciplinary team.

**Introduction** Toxic epidermal necrolysis(TEN), also known as Lyell syndrome, was first reported by Lyell in 1956. The disease is usually induced by drugs and progresses rapidly, which has an enormous threat to

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patient's life and high mortality rate. The incidence of TEN is vitally low so that there are few reports about it. We can occasionally see it in departments of rheumatology and psychiatry, but not in others, especially in department of general surgery. Recently, a patient suffered from TEN after surgery for gastric cancer and was cured with the treatment of multidisciplinary team, which included departments of dermatology, burns, infectious diseases, critical care medicine, nursing and general surgery. This article will summarize the diagnosis and treatment experience of this disease, and review the relevant literature.

## Case report

A 60-year-old male patient, diagnosed with cardiac cancer, was admitted to hospital for the feeling of obstruction after eating. After a series of preoperational examinations, there was no complications of surgery. It's worth noting that the patient told us that he had had an allergy after using antipyretics and presented with maculopapular rashes, fever and other symptoms a few years ago. Because there is no way to research, we speculate that the antipyretic drug belonged to nonsteroidal anti-inflammatory drugs (NSAIDs). So, we decided to conduct radical total gastrectomy and Roux-en-Y esophagojejunostomy for him. The surgery was successful with no other lesions unexpected.

However, the patient had a fever of 39 with multiple erythematous rashes and several small blisters developed at the right axilla, back, and around the buttocks while administering KabivenTM PI (fat emulsion, amino acid (17) and glucose (11%) injection) at noon on the first day post operation. We thought it was an allergic reaction induced by KabivenTM PI, which was stopped at once. 25 mg of promethazine was injected intramuscularly, too. To our dismay, these symptoms didn't disappear but progressed rapidly in the following hours. As a consequence, we had to ask the dermatologist for help. It's diagnosed that the patient was suffering from TEN. We took the advice from the doctor, which contained a slow intravenous drip of dexamethasone and external use of Compound Phellodendron Liquid and Ray Furnace Lotion, but to little effect. During physical examination, many loose blisters, epidermolysis and ulceration were found, which scattered in the trunk and limbs, with Nikolsky's sign (+). (Figure1a and 1b)

To alleviate symptoms of the patient and prevent the disease from progressing, we organized a multidisciplinary discussion on the second day after the surgery. Based on the opinions of various departments, including dermatology, burn, infection and so on, we took the following treatment measures for the patient. First of all, all suspected allergenic drug, such as cephalosporin, metronidazole and non-steroidal antipyretic analgesics, were discontinued and Fosfomycin replaced to prevent infection. Then, for the immune system, glucocorticoids and gamma globulin were available. However, there was a risk of anastomotic leakage with corticosteroids, but gamma globulin was more expensive. Because the patient has anastomoses, we used gamma globulin instead of corticosteroids. To avoid anastomotic leakage, we chose the gamma globulin at a dose of 20g per day from the third day after operation for three days in total. Next, given the patient's condition, nutritional support must be given, such as intravenous fat emulsion and enteral nutrition in case of anastomotic fistula. And fresh plasma was transfused with 350 ml and 250 ml on the 6th and 7th day, respectively. The skin care couldn't be ignored, either. We changed the dressing more frequently for the patient with the guidance of doctors from department of burn to prevent infection. Finally, the patient's liver function must be closely monitored since the patient was in the inactive stage of hepatitis.

Through our unremitting efforts, the patient's condition gradually improved. There were no new blisters or hyperthermia in the patient from the fourth day after surgery, and the wound showed a trend of healing and convergence from the fifth day. On the 7th day, the wound began to dry and heal gradually. On the 8th day, the patient began to take fluids. On the 14th day after surgery, the wound healed almost (Figure 1c and Figure 1d) and the patient was discharged. Six months after discharge, the wound healed completely.

## Discussion

Toxic epidermal necrolysis drug eruption (TEN), also known as toxic epidermal necrolysis, scalded skin syndrome, acute febrile pemphigus, epidermolysis erythroderma, scalded epidermal necrolysis and so on, which progresses rapidly and has severe symptoms, refers to rashes caused by some drugs and widely accompanied by systemic poisoning symptoms, even involving visceral organs. Usually, the patients have fever and

multiple mucosal lesions throughout the body. Because of multiple mucosal lesions, it's vulnerable for them to get secondary infection, resulting in sepsis and death. It's reported that the death rate of TEN is up to 14.8%-48% [1], although its relative low incidence [2]. There are many drugs being able to induce TEN [3], including sedative and sleeping pills, antipyretic and analgesic drugs, sulfonamides, antibiotics and traditional Chinese medicine, but the mechanism is not fully understood. Many factors, such as nature, medication method, genetic factors, environmental factors, therapeutic dose, course of treatment and treatment times of drugs, participate in the occurrence and progression of the disease. It has been proved that apoptosis of keratinocytes is the most prominent histological manifestation[4], and cellular immune response mediated by Fas signaling pathway plays an important role in the occurrence and progression [1,4].

In this case, we think that the disease was caused by amino acids according to discussion of MDT. But let's not forget that the patient used to have an allergy after using antipyretics and presented with maculopapular rashes, fever and other symptoms a few years ago. So, we stopped any suspected drug to alleviate the symptoms.

In clinical work, we should actively seek the cause of disease and take effective measures as soon as possible on our own initiative once the patient's similar symptom has a tendency to expand. Here, diagnosis and treatment experience about this case is going to be summarized and shared.

First of all, building an MDT is the cornerstone of the success. Second, because of large skin lesions, fluid loss is inevitable and a large amount of fluid replacement and correction of electrolyte disorder often can prevent the patients from organ dysfunction. Third, nutritional support is the basis in the treatment. Because of the negative nitrogen balance, timely nutritional support is an extremely vital therapeutic measure in comprehensive treatment. Fourth, keeping the wound clean is an important step. Frequent dressing change is not recommended for skin wounds, which is generally daily or every two days. If there are skin blisters, they can be pumped with sterile syringe and sprayed with recombinant human epidermal growth factor to promote the skin growth. Hydrogel dressing is recommended for protecting the wounds. Fifth, since the patients are highly allergic, antibiotic used to prevent infection increases the risk of sensitization and is not recommended unless there is a clear indication of using [5]. Sixth, specific treatments, including large doses of glucocorticoids and gamma globulin, are key to removing the hypersensitive state. At present, experts from home and abroad have different views on the use of glucocorticoid [6]. Some researchers believe that glucocorticoid cannot shorten the course of disease or reduce the fatality rate, but increase the risk of complications such as infection, sepsis and gastrointestinal bleeding [7], while others believe that the effect of glucocorticoid can reduce the fatality rate but not increase the time of the wound healing time[8]. We believe that the IgG level of the recipient's blood can be rapidly improved after intravenous gamma globulin, in order to enhance the body's resistance to infection and immune regulation and shorten the time of wound healing. However, what we should pay attention to is that patients with poor liver and kidney function are not recommend for use.

As for other unconventional treatments, there are few researches on them, including immunosuppressants [9], inhibitors of the tumor necrosis factor [10]and antibodies of TNF-α [10], which lack of the support of various data.

To sum up, we must attach importance to TEN as it's serious condition and rapid progression. Early diagnosis and timely treatment of the disease can significantly improve the prognosis. In addition, MDT should be set up as soon as possible, which may relieve the pain of patients as we expect, to achieve the purpose of cure.

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**Conflict of interest** All authors declare there are no conflict.

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Figure1. The condition and alteration of patient's skin.