

# Nursing Experience of an Elderly Patient with Systemic Disseminated *Penicillium marneffei*

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## Abstract

Elderly patients with systemic disseminated *Penicillium marneffei* are generally more seriously ill with high mortality. In addition to clear diagnosis and timely treatment, careful nursing throughout the hospitalization is particularly important for the patient's recovery. Psychological nursing and family emotional support, the treatment of adverse drug reactions, systemic infection wound care, the prevention of pressure sores in long-term bedridden patients, antithrombotic nursing, disinfection isolation and the standard prevention of nosocomial cross infection all play decisive roles in the patient's prognosis. After one month treatment and medical care, the patient was cured and was discharged from hospital. After discharge, the patient follow-up was carried out up to one year. This patient had completely recovered. In this paper, we report a successful nursing experience of an elderly patient with systemic disseminated *Penicillium marneffei*. With the summary of nursing key points, it could play a reference in the treatment and rehabilitation of similar patients.

## Keywords

*Penicillium marneffei*, Disseminated Type, Elderly Patients, Nursing Experience

## 1. Introduction

*Penicilliosis marneffei* is a systemic mycosis caused by *Penicillium marneffei*. *P. marneffei* is one of the few penicilliums that cause human diseases. It is the only temperature-sensitive biphasic fungus in the genus *Penicillium* [1]. The main clinical manifestations are fever, rash, weight loss, liver, spleen, lymph node enlargement and subcutaneous and deep soft tissue abscess, often involving multiple organs and common in the skin, bone marrow, lung and liver. More than 75% of the

patients have skin damage. This disease is mainly seen in people with low immunity, especially patients with AIDS. However, even those with normal immune function could also suffer from this disease [2]. On June 11, 2018, our emergency department received an elderly patient in severe condition with systemic disseminated *Penicillomyces marneffei*. After a month of active treatment and careful nursing, the patient was cured and discharged from the hospital. The patient had completely recovered in the one-year follow-up period, and informed consent was obtained for this report. The nursing report of this patient is as follows.

## 2. Case Report

The patient is a 65-year-old female from Heshan, Guangdong. Due to “redness and swelling of lower limbs for more than 6 months, rash for more than 3 months and fever for more than 1 month”, she was admitted to our department for treatment on June 11, 2018. The preliminary diagnosis was fever (chainin: *Penicillium marneffei* infection?). When the patient was admitted, she was in a clear state of mind with chronic disease. She had skin mucosa behind the ear, right breast, back and upper limbs. Skin ulceration was also observed. Purulent fluid exudated, a part of the scab was formed and the ulceration size varied. The right breast ulceration was the largest at approximately 5 cm × 3 cm and a red papule was visible behind the ear. A subcutaneous tubercle of 1 cm × 1 cm in size was palpable on the back of the left foot. Emergency CT: Double pneumonia, multiple nodules in both lungs. Cerebrospinal fluid examination was conducted on June 12. On the evening of this day, the patient’s condition worsened, with drowsiness, nausea and vomiting. On June 14, skin secretion detection and high-throughput gene detection for the infection agent *Penicillium marneffei* were conducted. The central nervous system and skin of the patient were infected, and the infection was considered to be systemic disseminated *Penicillium marneffei* infection. On admission, she was given amphotericin B for anti-fungal infection, combined with oral administration of 20 mL itraconazole every 8 hours for anti-fungal treatment, levofloxacin and tetroxacin. For the generally infected wounds, a stoma was created and the dressing was changed every day. Pus exudation was reduced and the wound gradually narrowed and scabbed. She recovered and was discharged on July 11. After discharge, patient follow-up was carried out up to one year. Patient was treated orally with itraconazole on time and regular lumbar puncture examination was performed. The dose of the drugs were adjusted according to the examination results.

### Nursing Problems and Measures

Nursing of consciousness disorder: The patient showed delirium, restlessness, drowsiness and other symptoms within 3 days after admission. CT examination showed mild hydrocephalus, indicating that the infection involved the central nervous system. Every day, the patient’s consciousness, pupil and vital signs were closely observed, and the doctor was timely informed of the patient’s condition

for treatment. The doctor was assisted with the nursing of lumbar puncture. The pressure, colour and character of the cerebrospinal fluid were observed and the patient was treated with 20% mannitol dehydration in accordance with the doctor's advice. The patient's mental health demonstrated improvement on June 16 due to the observation and nursing in place and timely medication.

The amphotericin B solution should be prepared in strict accordance with the doctor's instructions, dissolved in sterilized water and then added to 500 mL of 5% glucose gradually at 0.5 - 1 mg/(kg·d). Normal saline (0.9%) should not be used to dissolve drugs nor should dissolved drugs be added to normal saline for infusion or mixed with other electrolytes. A separate venous channel should be used and 5% glucose should be used to flush the tube before and after infusion to avoid crystallization, which causes adverse drug reactions and pipeline blockage [3]. During drug infusion, the patient and his/her family should be informed of relevant drug knowledge, while the medical staff should be informed of any discomfort.

Observation of adverse reactions: The common adverse reactions of amphotericin B include high fever, gastrointestinal reactions, abnormal liver and kidney functions and water and electrolyte disorders. Patients with severe condition also experience disturbance of consciousness and long-term use of amphotericin B may lead to varying degrees of vision and hearing impairment. Patients' consciousness and vital signs should be closely monitored during medication. Infusion speed should be slowed down or corresponding treatment should be given according to the doctor's advice when high fever and chills are present. Liver and kidney functions and water electrolyte must be checked regularly due to low potassium level. Patients must be advised to eat foods containing high potassium, such as bananas and oranges [4].

Pipeline nursing: The patient was treated with hypertonic drugs, 20% mannitol and amphotericin B during her stay in the hospital. The excessive time of peripheral venous infusion could easily cause local haemal redness, exudation and phlebitis. Therefore, to reduce the stimulation of drugs to local veins, the patient's pain must be relieved and medication must be ensured. Patients who need to dehydrate and use amphotericin B are routinely placed in central venous catheter through the peripheral vein. Before and after infusion, the tube is flushed with 5% glucose. After infusion, the tube is pulse sealed with heparin sodium brine every day to ensure smooth pipeline [3]. Dressing should be changed once a week and replaced when local bleeding or contamination is present. The skin condition of the puncture site should be observed to avoid infection. Knowledge of pipelines should be well communicated and functional exercise of the affected limbs should be performed.

Observation and nursing of patients with skin ulcer Physical examination showed that the patient had visible skin ulcers on the ear, right breast, back and both arms, along with purulent fluid seepage. A part of the skin was scabby with canker sizes. The largest of which was the right breast, approximately 5 cm × 3 cm in size, and a red papule behind the ear (**Figure 1**, **Figure 2**) a subcutaneous



**Figure 1.** A skin wound on the right chest (Before and after contrast).



**Figure 2.** A skin wound behind the left ear (Before and after contrast).

nodule was palpable on the back of the left foot, with a size of 1 cm × 1 cm (**Figure 3**). After admission, the patient was referred to the stomatology department for consultation and treatment was given in accordance with the degree of drainage and different sizes of the wound. Debridement was required and mei-chikang dressing was externally applied when effusion was present, while another dressing was applied for deeper wound. The dressing was changed every day and 2 - 3 days after the effusion was reduced. The doctor was assisted and samples were collected. The patient's skin exudate and cerebrospinal fluid showed *Penicillium marneffei*. The patient's bed was kept clean and tidy and she was guided when moving to the bed. Local wound compression and dressings were prevented from falling off, and the patient was instructed to pay attention to clean and dry skin, not to scratch the skin and inform the doctor in a timely manner for recording of any abnormality.

Psychological care and family emotional support for patients Due to the long course of the disease and the use of amphotericin B treatment could cause many side effects, psychological care and emotional support are needed. The treatment time is too long, the economic burden is heavy and a large area of the patient's body is vulnerable to infection, wound and pain. Anxiety, depression and lack of confidence must also be addressed. Therefore, medical workers should communicate more with patients and their families, inform the curative and side effects



**Figure 3.** A skin wound on the back of left foot (Before and after contrast).

of the drugs, provide assistance in daily life, enhance their confidence to overcome the disease and actively cooperate with the treatment and nursing.

Disinfection and ward isolation were performed. Bedside isolation and single-room isolation were provided when conditions permitted. Separate stethoscope, sphygmomanometer, thermometer, hand disinfectant and special treatment tray were dedicated to the care of the patient. Before and after contact with patients and during nursing operation, the medical staff should keep their hands clean and wear isolation clothes. Disposable gloves should be worn when contacting the wound, exudate and other pollutants. After operation, all contaminated dressings and disposable medical supplies should be placed in yellow medical garbage bags for unified treatment in strict accordance with the requirements of disinfection and isolation system. The patient's clothing must be marked infectious and placed into yellow special bag for high-temperature disinfection. The floor must be mopped and the bed must be wiped with 1000 mg/L of chlorine-containing disinfectant every day [5]. An air anion disinfection machine must be used twice a day for morning and evening ward ventilation. All aspects of standard prevention must be followed to reduce the possibility of cross-infection in the hospital.

### 3. Discussion

*Penicillium marneffeii* is the only biphasic fungus in the genus *Penicillium*. It is a myceliform at 25°C, yellow in the medium of salboru and secretes red pigment. At 37°C, it is yeast like, brown in the medium of brain-heart infusion, the highest positive rate of bone marrow and lymph nodes, followed by pus and blood. The bacteria are sensitive to amphotericin B. Increased attention should be given when observing the curative and side effects. Understanding the patient's psychological situation is important. Skin and ulcer wound care must be provided



for colostomy and corresponding effective nursing measures must be given to shorten the in-hospital time and promote recovery. In this case, through a case of *Penicillus marneffeï* severe elderly patients nursing follow-up observation, found that finding the pathogenic bacteria is the key to diagnosis of the disease, amphotericin B is the first treatment drugs, skin ulcer wound nursing for the patient's psychological and rehabilitation plays a positive role. For elderly patients with severe condition, infection of *Penicillus marneffeï* is very common. The earlier the diagnosis, the better the result. The finding of the pathogen in skin wound secretions and cerebrospinal fluid is the most important. Amphotericin B is the preferred drug to treat *Penicillus marneffeï* infection. However, drug side-effect and efficacy are two main considerations needs to be focused on. Skin wound healing play important roles for patient's psychology and rehabilitation. Single-person isolation or single room isolation should be taken to prevent from cross infection. The course of *Penicillus marneffeï* infection is often relatively long. Family and social support are important aspects of caregivers. Regular follow-up visits after hospital discharge are a strategy to prevent disease recurrence. The discussion of this case is expected to play a reference and help role in the treatment and rehabilitation of other elderly patients with systemic spread *Penicillium marneffeï*.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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