

BRIEF ARTICLE

Dermatitis Artefacta with *Proteus mirabilis* Infection in Coincidence with Pyoderma Gangrenosum in a Schizophrenic Patient

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ABSTRACT

Dermatitis artefacta (DA) is a psychiatric disorder with secondary manifestations on the skin. One of the most common skin lesions in DA are chronic ulcers which also can be caused by pyoderma gangrenosum (PG). There are some bacteria such as *Proteus mirabilis* found in chronic ulcers. The most common psychological condition related to DA is schizophrenia. There are some specific histopathology features of DA such as dominant destruction of epidermal layer, multinucleated epidermal keratinocytes or destruction of keratinocytes. Chronic ulcers in DA might mimic PG, which is a chronic recidive neutrophilic dermatoses. *Proteus mirabilis* is one of the most common causes of urinary tract infection, and can cause chronic ulcers and respiratory tract infection as pneumonia. This case describes a forty-one year old female with chronic wounds on her chest and left leg. Based on history of present illness, physical examination, laboratory tests and histopathology of the skin lesions, the patient was diagnosed with DA and PG. She was also diagnosed with schizophrenia, catatonic type. Chest x-ray showed pneumonia while the swab culture showed growth of *Proteus mirabilis*. She was given an oral cefadroxil 500 mg three times daily, cetirizine 10 mg once daily, wound dressing and gentamycin ointment twice daily. She also received oral risperidone 0.5 mg twice daily combined with behavioral therapy from a psychiatric outpatient clinic.

INTRODUCTION

Dermatitis artefacta (DA) is a psychocutaneous disorder consisting of self-induced skin lesions, more common in women than men with a ratio of 3: 1 to 20: 1. The highest incidence of DA occurs at the end of adolescence and adulthood.¹ Clinical features of DA are characterized by large numbers of morphological lesions, including chronic ulcers. The most frequent psychological conditions related to DA

include dissociative disorders, obsessive compulsive disorder, depression, bipolar disorder and schizophrenia.²

One of the causes of chronic ulcers is pyoderma gangrenosum (PG), a neutrophilic dermatosis characterized by erythematous nodules or sterile pustules that develops into painful violaceous ulcers especially on the lower legs.³ These chronic ulcers often contain different types of bacteria such as *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Proteus mirabilis*. *Proteus*

January 2024 Volume 8 Issue 1

species are gram-negative, anaerobic facultative bacteria that colonize the intestine and act as sources of nosocomial infections in hospitals. *Proteus mirabilis* infections are also associated with urinary tract infections and are often found in abscesses, decubitus ulcers or combustion.⁴

CASE REPORT

A forty-one year old female was admitted to the Dermatovenereology Outpatient clinic Dr. Moewardi General Hospital Surakarta, Indonesia due to recurrent ulcers on her chest and left leg. The first symptoms appeared 3 months prior to admission in the form of bullae which ruptured easily. The skin lesions were accompanied by itching, pain and burning sensation. The patient noted rubbing and scratching the lesions frequently, leading to the development of chronic and recurrent ulcers. On clinical examination, the patient presented with multiple erythematous demarcated ulcers with some crusts covered by necrotic tissue (**Figure 1**).

Our patient had been suffering from mental illness for the 6 years prior to admission which consisted of mood swings and depression, and poor self-care until she was eventually hospitalized with a diagnosis of catatonic schizophrenia. She also had a history of chronic cough for 4 years accompanied by fever without weight loss. Swab cultures of the boils showed growth of *Proteus mirabilis*. Serological tuberculosis test was negative. The chest x-ray demonstrated pulmonary infiltrates accompanied by air bronchogram sign on the right and left pericardial regions (**Figure 2**). Kidney and liver function tests were within normal limits.

Biopsy specimens were taken from the ulcers on her chest and left leg which were

examined with hematoxylin and eosin staining. The microscopic findings of specimen from the chest demonstrated interface dermatitis with multinucleated epidermal keratinocytes, while the specimen of left leg showed high dense neutrophilic infiltrate in the upper to lower dermis. Periodic acid-schiff (PAS) staining did not find any fungal elements (**Figure 3**).

The extensive history of recurrent ulcers, appearance, shape and location of the lesions within easily accessible reach to the patient, as well as histopathological findings and serological findings, led us to the diagnosis of DA with *Proteus mirabilis* infection in co-incidence with PG in schizophrenia. As such, the patient was treated with oral cefadroxil 500 mg three times a day, methylprednisolone 32 mg daily, cetirizine 10 mg daily, topical gentamycin ointment applied twice daily with wound debridement daily. She also received oral risperidone 0.5 mg twice daily in conjunction with behavioral therapy from a psychiatric outpatient clinic.

DISCUSSION

Dermatitis artefacta (DA), also known as factitious dermatitis in which patients deliberately induce skin lesions for any number of reasons, more commonly affects females than males with a ratio between 3:1 and 20:1. The lesions are typically multiple with bizarre morphology.¹ Ulcers are the most commonly reported cutaneous finding, while the most common complaints are pain (59%) and itching (37%). Dermatitis artefacta is often associated with psychiatric disorders such as schizophrenia. The history of present illness is commonly unrelated to the clinical findings, while the laboratory and histopathology findings show no abnormality.⁵

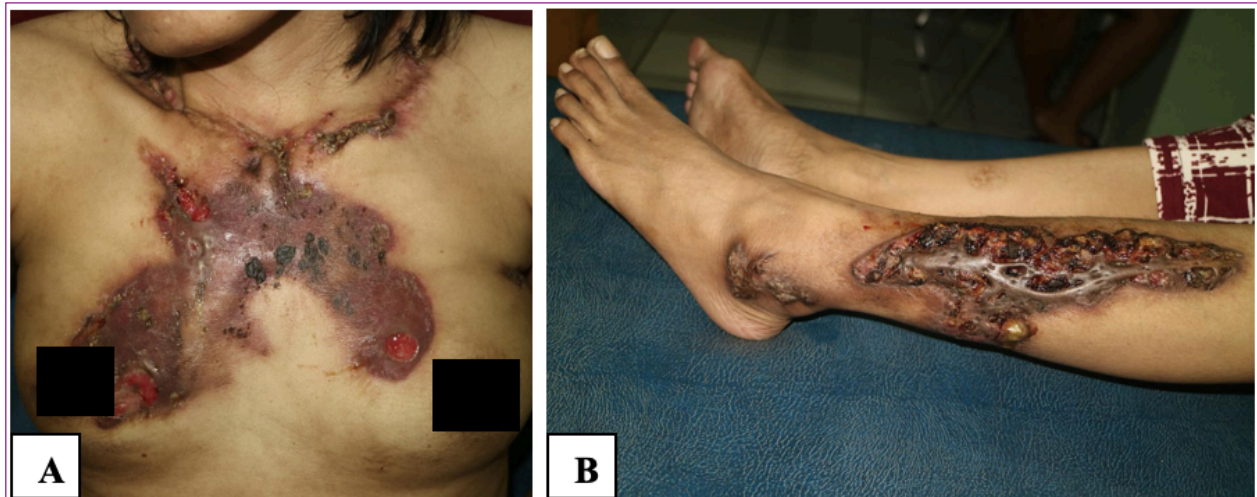


Figure 1. (A) The anterior chest: A linear erythematous plaque with multiple ulcers and crusts in some areas. **(B) The left leg:** An erythematous plaque with ulcer covered by necrotic tissue and hypertrophic scars.

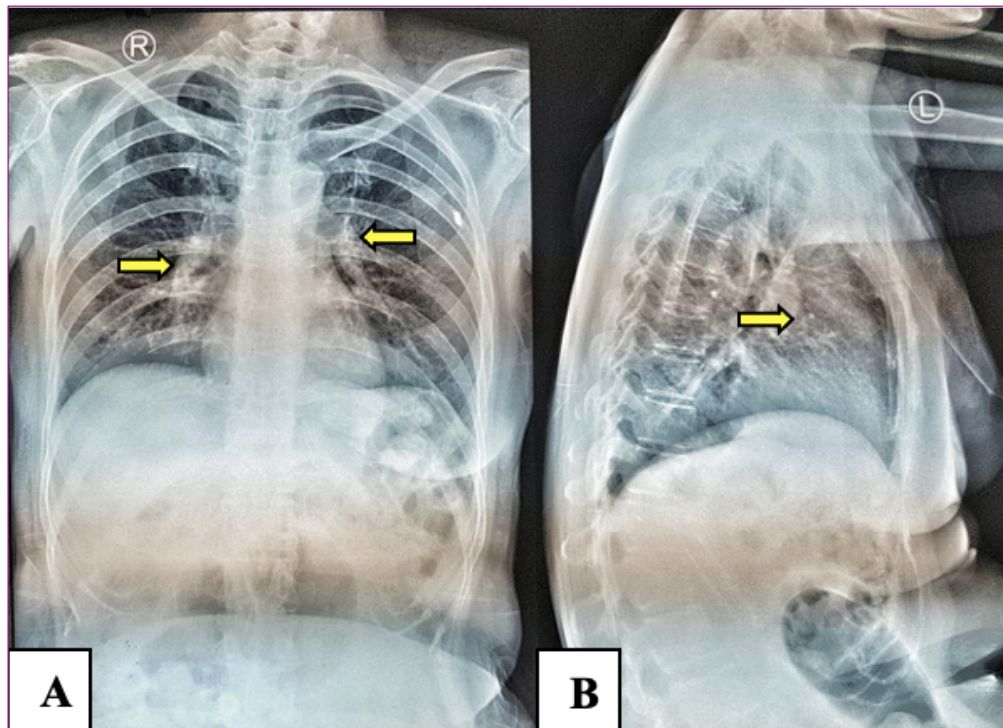


Figure 2. (A, B) Chest x-ray: pulmonary infiltrates with air bronchogram appearance on the right and left pericardial (yellow arrow).

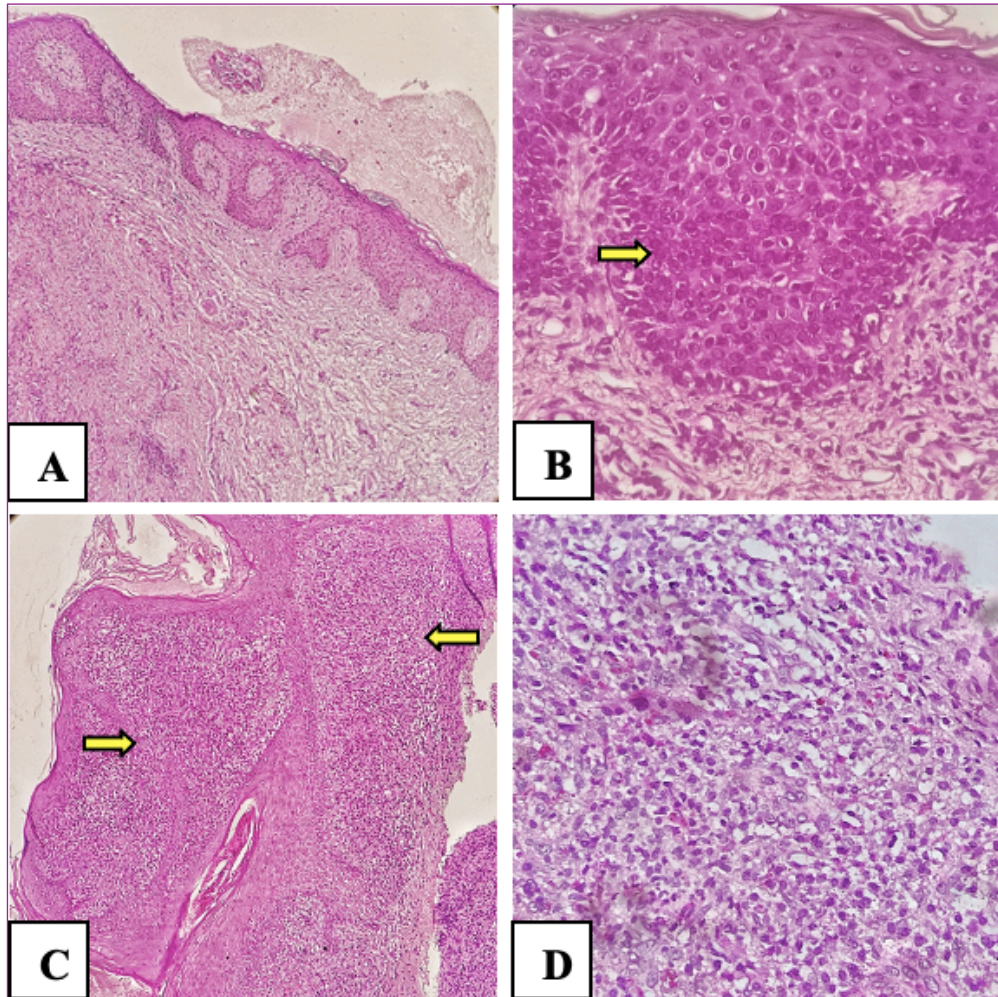


Figure 3. (A,B) The specimen from chest. (A) Interface dermatitis (HE, 10x). (B) Numerous multinucleated epidermal keratinocytes within the epidermis (yellow arrow) (HE, 40x) (CD) The specimen from left leg. (C) Dense infiltrate from upper until lower dermis (yellow arrow) (HE, 10x). (D) Absence of fungal elements (PAS, 40x).

In our case, the differential diagnosis for the skin lesion on our patient's chest included scrofuloderma, which is the most common cutaneous form of tuberculosis caused by *Mycobacterium tuberculosis*. The skin lesion is characterized by reddish blue nodules on the lymph nodes leading to sinus tracts and ulcers with granulation tissue. The diagnosis of scrofuloderma is confirmed by fine needle aspiration, microbiological and serological tests.⁶ The other differential diagnosis of the skin findings on our patient's chest is PG, which is a chronic neutrophilic dermatosis.

The skin lesion of PG is characterized by violaceous chronic recurrent ulcers. Pyoderma gangrenosum is often associated with systemic diseases including inflammatory bowel disease, arthritis, or acute leukemia, while the classical form of PG is a chronic painful ulcer.⁷ The differential diagnosis of cutaneous findings on the left leg is chromoblastomycosis, which is a deep fungal infection caused by *Fonsecaea pedrosoi*. There are 5 clinical types of chromoblastomycosis: nodular, verrucous, plaque, tumor and cicatrix or atrophy. The

definitive diagnosis can be confirmed by histopathological examination showing sclerotic bodies (Medlar bodies).⁸

The clinical examination of her chest showed a linear erythematous plaque and multiple ulcers without sinus tracts. The microbiological and serological tests did not show growth of *Mycobacterium tuberculosis*, while the histopathological findings showed no appearance of granulomatous infiltrates with caseous necrosis. The clinical examination of the left leg showed an erythematous plaque with ulceration and overlying necrotic tissue and hypertrophic scarring. Microbiological testing revealed no bacterial growth, and the histopathological findings did not show sclerotic bodies (Medlar bodies). Thus, the differential diagnoses of scrofuloderma and chromoblastomycosis can be ruled out.

Histopathological features of DA are nonspecific and similar to those of other skin disorders. In general, findings that should prompt consideration of the diagnosis DA include prominent epidermal damage, multinucleated keratinocytes or deformed keratinocytic nuclei.⁹ In our case, the histopathological findings of the specimen from the chest demonstrated interface dermatitis with numerous of multinucleated epidermal keratinocytes within the epidermis.

Pyoderma gangrenosum can be confirmed by histopathological examination revealing neutrophilic infiltration within the dermis.⁷ The microscopic features of the specimen from the left leg showed dense neutrophilic infiltrates on the upper until lower dermis, suggesting a diagnosis of PG.

Proteus spp. are found to be opportunistic human pathogens. The bacteria cause infections largely in patients with impaired immunity and wound infections as well as

nosocomial infections.¹⁰ Respiratory tract infections caused by *Proteus mirabilis* can be seen in bronchitis, bronchiectasis, emphysema and pneumonia.¹¹ Our patient had chronic cough for 4 years. The chest x-ray demonstrated pneumonia, while the lesion swab culture from her chest confirmed the growth of *Proteus mirabilis*. Based on these findings, secondary infection of the chest ulcer was likely due to *Proteus mirabilis*.

CONCLUSION

Dermatitis artefacta and PG can appear concomitantly. Chronic ulcers in DA may mimic those found in PG. Therefore, thorough examinations are mandatory. Histopathological investigation is necessary to make a definitive diagnosis of DA with *Proteus mirabilis* infection in co-occurrence with PG in schizophrenia.

Conflict of Interest Disclosures: None

Funding: None

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