

## SURGICAL EXCISION ON RECURRENT FURUNCULOSIS WITH PLASMACYTOSIS: A CASE REPORT

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### Abstract

Dermatological examination revealed a solitary nodule on the skin on an erythematous base filled with pus. This study aims to analyze the monoclonality of electrophoretic serum proteins. This study used descriptive qualitative method. The type of data used in this study is qualitative data, which is categorized into two types, namely primary data and secondary data. Sources of data were obtained through library research techniques (library study) which refer to sources available both online and offline. Data collection techniques used in this study were observation, interviews and research. This data is analyzed and then conclusions are drawn. The results showed that the histopathological picture of the skin biopsy showed aggregates of inflammatory cells in the perifollicular area which consisted of neutrophils, lymphocytes, monocytes, eosinophils, and plasma cells, especially in the dermal layer. Chronic and recurrent furunculosis causes plasma reactivity to inflammation, promoting plasma cell deposition as a risk of skin plasmacytosis. Histopathological examination and immunostaining can help establish the diagnosis of plasmacytosis that occurs in chronic skin infections. Surgical intervention can be performed in cases of furunculosis with fluctuating and solitary lesions resulting in fewer recurrences.

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**Keywords:** Case Report, Plasmacytosis, Recurrent Furunculosis, Surgical Excision

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### INTRODUCTION

Furunculosis is one of skin infections characterized by inflammatory process in the deep hair follicle. It can be cured by giving topical and/or systemic antibiotic, while in some cases may develop into recurrence which is defined as three or more episodes within 12 months.<sup>1</sup> Plasmacytosis is a rare entity which manifest as cutaneous symptoms which subsequently progress to systemic impairments.<sup>2</sup> It has been estimated that the prevalence of cutaneous plasmacytosis is 2-4% of all extramedullary plasmacytoma cases.<sup>3,4</sup> Based on our knowledge, none of furunculosis cases accompanied with cutaneous plasmacytosis has been documented. Therefore we reported a case of recurrent furunculosis with plasmacytosis treated with surgical excision (Almazan & Jung, 2016)

A 57-years-old woman admitted to Dermatovenereology outpatient clinic of Dr. Moewardi General Hospital Surakarta, Central Java, Indonesia with a lump filled with pus on her left cheek. It appeared 2 years ago, which was then recurrent for 6 times and several weeks prior to her visit the lump enlarged. The lesion filled with both pus and blood without itch or pain. She had taken some medication from previous primary healthcare but there was no improvement (Asavisanu et al., 2019). The patient reported no persistent cough, drastic weight loss, joint pain, and unreasonable persistent fever. The patient was never been diagnosed with tuberculosis or suffer from malignancy (Bhatnagar et al., 2015).

On dermatological examination we obtained a erythematous base solitary nodule filled with pus. Laboratory results were within normal limit. The presence of a solitary lump near the nose in the midface area requires a biopsy to confirm the diagnosis, this is necessary to rule out the diagnosis of skin cancer (Demos et al., 2012). Skin cancer, especially basal cell carcinoma in the midface area, tends to be more aggressive and infiltrative.<sup>5</sup> The evaluation of protein serum electrophoresis revealed no monoclonality. Nasal x-ray examination indicated no sign of abnormality. Her skin biopsy showed hyperkeratosis basket wave type and acanthosis with elongation of rete ridges. There were abundance of inflammatory cells in the dermal layer dominated with plasma cells followed by lymphocytes, neutrophils, eosinophils, and hystiocytes (Gasson, 1991). The CD 138 immunostaining analysis was positive. Thus we diagnosed this patient with recurrent furunculosis along with plasmacytosis. We performed surgical excision, and we also gave oral cefadroxil 500 mg twice daily for 7 days, oral mefenamic acid 500mg three times per day. On the first visit after surgery, the surgical site appeared good without any inflammation signs or adverse events and the patient seemed satisfied with the outcome. We monitored the patient for 6 months and there has been no recurrence since then .

## **RESEARCH METHODS**

The research method used in this research is descriptive qualitative method. The type of data used in this research is qualitative data, which are categorized into two types, namely primary data and secondary data. Sources of data were obtained through library research techniques (library study) which refer to sources available both online and offline such as: scientific journals, books and news that come from reliable sources. These sources are gathered based on discussions and linked from one information to another. Data collection techniques used in this research are observation, interviews and research. This data is analyzed and then drawn conclusions.

## **RESULT AND DISCUSSION**

Furunculosis is a primary infection in deeper hair follicle leading to abscess in sub-cutaneous tissue and necrotic tissue (Han et al., 2018),(Him et al., 2017) Staphylococcus aureus in anterior nares plays definite role in the etiology of recurrent and chronic furunculosis. Colonization also occurs on warm and damp skin folds such as nasolabia, behind ears, under pendulous breasts, and inguinal canals.<sup>1,8</sup> Furunculosis manifests as soft erythematous nodules with overlying pustule in perifollicular area. Progressive inflammation causes fluctuated lesion and ruptures. Recurrent furunculosis is defined as furunculosis appearing at least 3

times within 12 months period. Its prevalence has been estimated in 10% patients with furunculosis. The highest incidence occurs in 20-34 years of age. Female is more affected than male (Ibler & Kromann, 2014).

Cutaneous plasmacytosis is a rare skin disorder. It was first reported in 1976 by Yashiro. It is characterized by mature plasma cells infiltrating into the skin without enlarged lymph gland or other systemic manifestations. It commonly occurs among Asian adults particularly Japanese. Cutaneous plasmacytosis appears as reddish-brown macula, papule, nodule, or plaque with a diameter of 1 – 5 cm. The predilection sites are face, trunk, and extremities (Kobayashi et al., 2015).

The spectrum of furunculosis histopathology is described as the infiltrate of inflammatory cells dominated by neutrophil on the wall and hair follicle ostium. It is limited only on superficial follicle, specifically infundibulum. Spectrum of reactivity plasma cells on chronic furunculosis may be found.<sup>14</sup> In our case the histopathological examination revealed abundant infiltrates in perifollicular area consisting neutrophil, lymphocyte, monocyte, eosinophil and massive plasma cells. (Han et al., 2018) stated that proliferative reaction of monoclonal plasma cells on the skin results from the occurrence of plasmacytosis histopathological spectrum.<sup>15</sup> Histopathological features of our patient showed infiltrates dominated by monomorphic plasma cells in the dermis. Immunohistochemistry of CD 138 examination was also positive (Shallcross et al., 2015). We did not find monoclonality in the serum protein electrophoresis analysis. This differentiates it from cutaneous plasmacytoma (Mallison 3rd et al., 1991).

Furunculosis is commonly caused by *Staphylococcus aureus* which produces Pantone-Valentine Leukocidin (PVL), a cytotoxin which pore forming toxin consisting of two protein components (\*LukF and LukS) to disrupts neutrophil membrane cell (Nowicka et al., 2018). Moreover, PVL is associated with chronic or recurrent skin infections.<sup>16</sup> Pantone-Valentine Leukocidin encoded luk-PV gene was observed in 85% of patients with furunculosis, The mechanism of recurrence of plasmacytosis remains unknown (Narain et al., 2017). A study by Frankel et al reported that skin suffering from chronic inflammation is an optimal predisposition of accumulated plasma cell specifically local antigen, antibody forming cells (AFC).<sup>14</sup> Patients with recurrent furunculosis commonly have increases in GM-CSF (Macrophage Granulocyte-Colony Stimulating Factor), IL-1, IL-3, IL-4, TNF- $\alpha$ , and interferon  $\gamma$ .<sup>17</sup> Macrophage Granulocyte-Colony Stimulating Factor is a member of glycoprotein cytokines which has the potential for proliferation, maturation and improvement of hemopoietic cell function.<sup>18</sup> Zapata et al found that an increase in TNF regulates the overproduction of TNF Receptor associated factor 3 (TRAF 3) in B cells, thereby triggering B cell proliferation and initiating chronic inflammatory processes.<sup>19</sup> In vivo studies conducted by Zhang et al, revealed that GM-CSF together with IL-6 induce myeloma cell proliferation (Masiuk et al., 2010).

Systemic antibiotic is an option, particularly for furunculosis with systemic symptoms. The common antibiotics used for treating furunculosis are dicloxacillin and cefadroxil. Surgical intervention can be performed on furunculosis cases with fluctuated and solitary lesion (Mawardi et al., 2016). It is also recommended in cases of recurrent furunculosis because it reduces the incidence of recurrence. Surgical excision can be done to cure the skin inflammation and also prevent development of malignancy in plasmacytosis.<sup>21</sup> In our case we performed surgical

excision as oral and topical treatments did not help to cure the lesion. During the follow up we did not encounter any adverse events and the patient was satisfied with the outcomes.

## CONCLUSION

Plasmacytosis is commonly found in malignancy process, however in some cases it can be observed in chronic skin infections. Recurrent furunculosis results in chronic inflammation which triggers plasmacytosis due to plasma reactivity. Histopathological examination and immunostaining by using CD 138 may be helpful to determine plasmacytosis. Surgical excision should be performed when the lesion does not respond to both topical and oral treatment.

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