

Case Report

# A Rare And Severe Complication Of SLE: Bullous Systemic Lupus Erythematosus

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**Abstract** — Bullous systemic lupus erythematosus (BSLE) is a rare antibody-mediated blistering eruption of subepidermal tissues in patients with underlying SLE. We report a case of a 19 years old Indian unconscious male who presented with acute generalized blistering lesion and widespread tense vesicles and Bullae at the superior trunk, proximal superior limbs, and face(lips) with the symmetrical distribution. Bullae contained haemorrhagic fluid and bleeding was also seen on the ruptured site. The lesions are also seen on mucosal areas such as perioral, pharyngeal, laryngeal, and genital areas. Multiple erosions and crusting lesions are also seen over the body. Multiple scalp plaque erythematous peeling lesions with foul smells. Blood investigation showed leucocytosis and metabolic acidosis with a diagnosis of septic shock secondary to infected BSLE. He was treated with IV hydrocortisone 200mg, analgesic, and IV Ceftriaxone. Unfortunately, he collapsed 24 hours later and passed away. This case report highlights the importance of early detection of BSLE as an acute skin complication in patients with underlying SLE and its management steps.

**Keywords** — BSLE, Septic Shock, Therapeutics, Outcome

## I. INTRODUCTION

Bullous systemic lupus erythematosus (BSLE) is a rare antibody mediated blistering eruption of subepidermal tissues in patients with underlying SLE. It is a distinct subtype of SLE with rare cutaneous manifestation of severe vesiculobullous eruption which may lead to septic shock and mortality.

Clinically, patients with BSLE usually present with wide spreading vesicles lesions that contain either haemorrhagic or serous fluid, which are commonly seen over the body trunk and also sun-exposed areas, associated with variable intensity

pruritus and pain [1]. Patients might also exhibit the common SLE symptoms including fever, weight loss, photosensitivity and clinical manifestation of cardiac, pulmonary, central nervous symptoms or renal diseases [1].

The mortality rate in BSLE patients is reported high, secondary to infection [2]. This case report highlights the importance of early detection of BSLE as an acute skin complication in patient with underlying SLE and its management steps.

## II. CASE REPORT

A 19-year-old Indian male was brought in by family members to the emergency department (ED) for acute generalized skin presentation. Patient presented to the ED in an unconscious state, his GCS was 6 (E1V1M4). He was intubated for airway protection. His skin lesions were widespread tense vesicles with bullae at superior trunk, proximal trunk, superior limbs, face and lips. Bullae contain haemorrhagic fluid and superficial bleeding were also seen at ruptured lesions. The lesions were also seen on his mucosal and genital area. Multiple erosions, crusting and scalp plaque erythematous with foul smelling lesions were all over the body. History was collected from the patient's father, he claimed that patient's condition worsened since 1 month ago while patient was under his grandmother's care. Patient had begun to be less responsive a day before presentation.



Fig. 1 Photos showing patient's widespread skin lesions. Note the bullae seen at the proximal trunk, superior trunk and superior limbs.



Fig. 2 Photos showing patient's bullae containing haemorrhagic fluid & superficial bleeding (seen at ruptured lesions). Crusting and erythematous plaque are also seen.

When patient arrived at the ED, his vital signs were BP: 109/39, heart rate: 111. For investigation, FBC showed leucocytosis, ABG showed that PH was acidic, low bicarbonate, and normal PCO<sub>2</sub>. UFEME showed proteinuria and haematuria. Renal profile indicated that sodium level and creatinine level was low while urea was high. Complement C3 and C4 levels were low. Patient was diagnosed with septic shock secondary to infected BSLE. He was also diagnosed with metabolic acidosis and Addisonian crisis. At ED, patient was given IV Fentanyl 100mg, IV Ketamine, IV hydrocortisone 200mg, lytic cocktail, and IV noradrenaline.

Patient was also given calcium gluconate for hyperkalaemia and IV Ceftriaxone for the infection. Unfortunately, he collapsed 24 hours later.

## III. DISCUSSION

BSLE is a distinct subtype of SLE with rare cutaneous manifestation of vesiculobullous eruption. It accounts for 5% of SLE patients. The pathophysiology of BSLE is mainly characterized by the presence of autoantibodies to type VII collagen. The type VII collagen is the main component of the anchoring fibrils within the cutaneous basement membrane zone [3]. Anchoring fibrils has important function in the attachment of the epidermis to the dermis. This formation of autoantibodies against type VII collagen will eventually causing weakening of the basement membrane-dermal adhesion and result in the appearance of subepidermal blistering upon histopathology of BSLE patients. Various circulating autoantibodies has been identified in BSLE patients including antibody that are directed against the non-collagenous domain type 1 and 2 (NC1 and NC2) of type VII collagen which are commonly found in the basement membrane zone and also other autoantibodies such as laminin 5, laminin 6, BPAg1 and BPAg2 [4].

Clinically, patients with BSLE commonly present acutely with vesiculobullous lesions. These lesions appeared predominantly over the body trunk, especially extensor surface of the limbs. Besides, BSLE lesions are routinely found on sun-exposed areas, associated with history of photosensitivity. Patients oftentimes also experience variable intensity pruritus and pain symptoms. Patients might also exhibit the common SLE symptoms including fever, weight loss, photosensitivity and clinical manifestation of cardiac, pulmonary, central nervous symptoms or renal diseases [1].

Further, BSLE is commonly considered as a clinical features of underlying systemic lupus erythematosus (SLE). Most patients with BSLE have a underlying diagnosis of SLE. However, the development and severity of BSLE is not related and is independent of SLE activity. For immunity, patients with BSLE are more prone for infection as their immune response is innately dysregulated. In patients who are on immunosuppressive treatment such as prednisolone, the risk is heightened as this medication further weakens their immune body reaction [5]. As most patients with BSLE have a preceding diagnosis of SLE, therefore, whenever clinicians encounter patients with SLE who present with acute blistering lesion and widespread tense vesicles and bullae should immediately has the consideration of diagnosis of BSLE.

However, other differential diagnosis should be considered as well. In view of differential diagnosis, the diagnosis of bullous systemic lupus erythematosus might be confused with a few other blistering disorders, including two autoimmune blistering diseases, including dermatitis herpetiformis (DH) and epidermolysis bullosa acquisita (EBA). The clinical, histologic, and immunohistochemical features of BSLE are actually quite similar to these two diseases. EBA is actually a rare autoimmune blistering disorder with clinical features of tense subepithelial blisters and vesicles found over the sites of injury. Its pathophysiology involves the similar autoantibodies against type VII collagen. It tends to heal with multiple scarring and formation of milia. A important distinguishing

clinical feature includes that patients tends to have the absence of preceding diagnosis of SLE and a lack of histologic finding of large deposits of mucin in the dermis. Besides that, patient with EBA has slower and poorer response to dapsone compared to BSLE patients [6]. For Dermatitis herpetiformis (DH), it has a skin distribution that is distinctly different from that of BSLE. The pruritic lesions have a predilection to the extensor surfaces, elbows, knees, and buttocks. For histology examination, DH patients has the presence of deposition of IgA in the dermal papilla which is absent in BSLE patient [7].

For diagnosis of BSLE, clinicians should have a careful and systematic review of patient's clinical features, serologic and immunofluorescence, and histologic result, with presence of preceding history of SLE disease [8]. The diagnosis criteria of BSLE involves the mandatory features and supportive features. Mandatory features include the acute eruption of bullae on normal erythematous skin, presence of predominantly neutrophil infiltrate in superficial dermis with subepidermal blistering in histopathological results, presence of linear or granular immunoglobulin IgG, IgM, or IgA deposition within the basement membrane zone in direct immunofluorescence (DIF) test with raised level of antinuclear antibody (ANA). Other supportive features should also be evaluated such as detection of autoantibodies against type VII collagen in serum via enzyme-linked immunosorbent assay [8]. In this case, patient had a skin biopsy was done 2 months prior to this admission. Patient's skin biopsy showed subepidermal vesicular bullous lesion with neutrophils infiltration. Immunofluorescence (IF) studies of patient also showed linear deposit of IgG, IgA, IgM, C3 and C1q at the dermal epidermal junction. All these features were suggestive of bullous lupus erythematosus.

The data evidence for the management of BSLE are limited, as it is very rare and treatment recommendations are based on a few case reports and expert opinions. It is recommended to give dapsone as the first line treatment [9]. Dapsone therapy is very effective for BSLE. New blister formation usually stops within the first few days of treatment. In adults, the starting dose of dapsone is 50mg/day. Once a complete response has been achieved, the dose of dapsone should be reduced to the lowest dose necessary to control the disease. Most adult patients require 25 mg per day or 100 mg twice a week up to 100 mg daily to maintain improvement. Dose reductions should be attempted periodically. The prognosis of BSLE is excellent. Most of the BSLE patients will be controlled with dapsone therapy alone. Treatment can usually be stopped completely within one year. Patients may also need initiation or augmentation of immunosuppressive therapy to control the systemic manifestation of SLE. For this case, dapsone therapy should be initiated for the patient. It might make a significant effect over the outcome of the patient's condition. Unfortunately, in this case, patient developed multiorgan failure as evidenced from presence of metabolic acidosis. With concomitant septic shock, prognosis becomes worse.

For the complications of BSLE, patients tend to develop infection of exposed and affected skin, sloughing esophagitis and also clinical complications from underlying disease of SLE [8].

#### IV. CONCLUSIONS

BSLE is a rare and severe skin complication of SLE. Early detection of BSLE and initiation of appropriate management strategy could improve patient's prognosis dramatically.

#### CONSENT TO PARTICIPATE

Written informed consent was obtained from the patient for the anonymized information to be published in this article.

#### CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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#### REFERENCES

- [1] Odonwodo, Amaka, and Priyanka Vashisht. "Bullous Systemic Lupus Erythematosus." In StatPearls [Internet]. StatPearls Publishing, 2022. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK557445/>
- [2] Fors Nieves, C. E., & Izmirly, P. M. (2016). Mortality in systemic lupus erythematosus: an updated review. *Current rheumatology reports*, 18(4), 1-7. doi.org/10.1007/s11926-016-0571-2
- [3] Contestable, J. J., Edhegard, K. D., & Meyerle, J. H. (2014). Bullous systemic lupus erythematosus: a review and update to diagnosis and treatment. *American journal of clinical dermatology*, 15(6), 517-524. doi.org/10.1007/s40257-014-0098-0
- [4] Chan, L.S., Lapiere, J.C., Chen, M., Traczyk, T., Mancini, A.J., Paller, A.S., Woodley, D.T. and Marinkovich, M.P. (1999). Bullous systemic lupus erythematosus with autoantibodies recognizing multiple skin basement membrane components, bullous pemphigoid antigen 1, laminin-5, laminin-6, and type VII collagen. *Archives of Dermatology*, 135(5), 569-573. doi.org/10.1001/archderm.135.5.569
- [5] Danza, A., & Ruiz-Irastorza, G. (2013). Infection risk in systemic lupus erythematosus patients: susceptibility factors and preventive strategies. *Lupus*, 22(12), 1286-1294. doi.org/10.1177/0961203313493032
- [6] Gupta, R., Woodley, D. T., & Chen, M. (2012). Epidermolysis bullosa acquisita. *Clinics in dermatology*, 30(1), 60-69. doi.org/10.1016/j.clindermatol.2011.03.011
- [7] Ko, C. J., Colegio, O. R., Moss, J. E., & McNiff, J. M. (2010). Fibrillar IgA deposition in dermatitis herpetiformis—an underreported pattern with potential clinical significance. *Journal of cutaneous pathology*, 37(4), 475-477. doi.org/10.1111/j.1600-0560.2009.01472.x
- [8] Lipsker D. Bullous systemic lupus erythematosus. In: Callen J, Ofori A, editors. *UpToDate* [Internet]. Waltham (MA): UpToDate Inc; 2020 [cited 2022 May 27]. Available from: <https://www.uptodate.com/contents/bullous-systemic-lupus>
- [9] Duan, L., Chen, L., Zhong, S., Wang, Y., Huang, Y., He, Y., Chen, J. and Shi, G. (2015). Treatment of bullous systemic lupus erythematosus. *Journal of immunology research*, 2015. doi.org/10.1155/2015/16706