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REVIEW ARTICLE

CATASTROPHIC NEUROPSYCHIATRIC LUPUS ERYTHEMATOSUS FLARE WITH MULTIPLE CNS MANIFESTATIONS

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ABSTRACT

Background: Systemic Lupus Erythematosus (SLE) is known to cause a wide array of neuropsychiatric (NPSLE) issues, impacting a substantial proportion of affected individuals (pooled prevalence ~30% in SLE populations). Although severe events such as myelitis (seen in ~0.5-2% of SLE cases) and intracranial hemorrhage (~0.4% incidence) are recognized NPSLE complications, the specific combination of concurrent subarachnoid hemorrhage (SAH), cranial subdural hemorrhage (SDH), spinal SDH, and myelitis occurring simultaneously is exceptionally uncommon. ***Case Presentation:*** This report details the case of a 30-year-old female, whose previously well-controlled SLE (Class II Lupus Nephritis) acutely worsened into a severe multi-system flare. Prodromal symptoms emerged roughly six weeks earlier, followed by an acute onset of severe headache, neck pain, and swiftly progressing quadriparesis approximately 18 days before she was admitted to our tertiary care facility in Kolkata, India. Upon admission (Day 0), her neurological examination revealed quadriparesis, affecting the lower limbs and left side more significantly. Imaging and investigations subsequently confirmed widespread SAH, bilateral cerebellar SDH, non-enhancing myelitis from C4-C6, and an anterior spinal SDH spanning C5-D3. Multifocal intracranial vasculitis was suggested by digital subtraction angiography. Laboratory findings indicated high SLE activity, including low complement levels (C3/C4) and positivity for specific antibodies (SS-A/Ro52/nRNP/Sm), although dsDNA antibody tests were negative at this time. An initial period of stabilization permitted transfer to a high-dependency unit (around Day 10). However, despite treatment with high-dose steroids, prior IVIG administration, and Rituximab infusion (Day 18), her clinical trajectory declined due to complications including severe sepsis, pancytopenia, possible myocarditis, and progressive multi-organ dysfunction. This necessitated readmission to the ICU (Day 25) for mechanical ventilation. Following discussions about the goals of care given her grave condition, she was discharged at the family's request on Day 28 for continued supportive care in her home country of Bhutan. ***Conclusions:*** This case underscores the potential for a devastating cluster of neurological emergencies in NPSLE, likely stemming from CNS vasculitis during a severe systemic SLE exacerbation. It highlights significant diagnostic hurdles, especially distinguishing the inflammatory flare from infection, and illustrates the complexities of managing critical illness alongside aggressive autoimmune disease.

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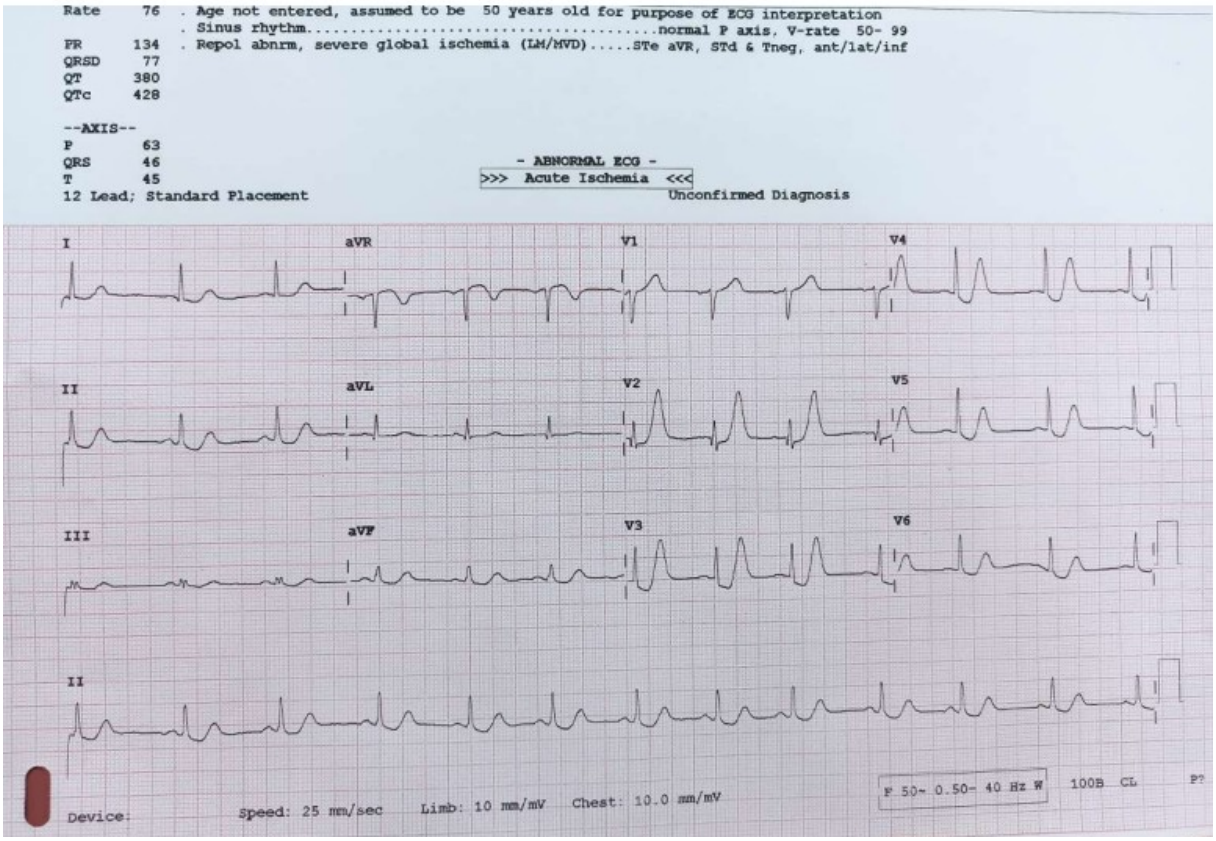
INTRODUCTION

Systemic Lupus Erythematosus (SLE) is a multifaceted autoimmune disorder impacting numerous organ systems and can culminate in severe, widespread disease activity [1]. This report concentrates on Neuropsychiatric SLE (NPSLE), a significant and serious sequela of SLE. NPSLE affects a considerable segment of the SLE population (pooled prevalence estimates center around 30%, with wide variation from 13-84% reported across studies) and is a major contributor to patient morbidity and mortality [2]. The American College of Rheumatology has cataloged 19 distinct \ NPSLE syndromes affecting both the central and peripheral nervous systems [3]. While severe neurological events like transverse myelitis (estimated prevalence ~0.5-2% in SLE) and intracranial hemorrhage (ICH, occurring in ~0.4%) are known critical complications, their co-occurrence—specifically involving SAH (itself noted in 1-4% of SLE cases), cranial SDH, extensive spinal SDH, and myelitis—is extraordinarily rare. This report describes such a case encountered at a tertiary center in Kolkata, India, aiming to shed light on the diagnostic and therapeutic intricacies involved.



CASE PRESENTATION

- **Background:** The patient was a 30-year-old woman from Bhutan, diagnosed with SLE approximately 7 years prior (initially ANA+/dsDNA+). Her history included Class II Lupus Nephritis and hypothyroidism. She had reportedly been stable for seven years on a regimen of mycophenolate mofetil (MMF; 1g BID), hydroxychloroquine (HCQ; 200mg OD), low-dose prednisolone (5mg OD), and thyroxine (50mcg OD).
- **Disease Flare and Initial Neurological Event (~6 weeks prior to tertiary admission, Bhutan):** Signs of a flare emerged about 6 weeks before transfer to our hospital, manifesting as anasarca, mild shortness of breath, and anemia (Hgb ~7.3 g/dL) necessitating blood transfusion. An initial echocardiogram revealed a minimal pericardial effusion with an ejection fraction (EF) of 45%. Treatment for suspected pneumonia occurred approximately 3 weeks before admission, but edema lingered. Around 18 days prior to admission, the onset of severe headache and neck pain marked a sharp neurological deterioration. Quadriparesis developed rapidly (reportedly within about 30 minutes), progressing in a pattern affecting the right lower limb, then left lower, then left upper, and finally right upper limb. During re-hospitalization in Bhutan in the subsequent ~2.5 weeks, MRI showed cervical cord edema (C2-C6) consistent with myelitis, along with right parietal SAH. She developed oliguric Acute Kidney Injury requiring hemodialysis due to hyperkalemia. Treatment with pulse methylprednisolone yielded no improvement, after which she completed a 5-day course of IVIG.
- **Tertiary Center Presentation and Evaluation (Day 0 onwards):** Upon arrival at our tertiary center (Kolkata, India), the patient exhibited quadriparesis (more pronounced in the lower extremities and on the left), fever, and cough. Physical examination showed a GCS of 15, anasarca, flaccid muscle weakness with reduced tone, lower limb areflexia, and upper limb hyporeflexia. Admission labs indicated moderate anemia (Hgb 7.5 g/dL), borderline platelet count (150x10^9/L), neutrophilic leukocytosis (10.77x10^9/L), a slightly elevated INR (1.32), normal APTT, and significantly depressed complement levels (C3 38.0 mg/dL, C4 7.0 mg/dL). Further serology confirmed ANA positivity (including SS-A+, Ro52+, nRNP/Sm+) but was negative for dsDNA antibodies at this time. Extensive investigations were undertaken to assess multi-organ involvement. Repeat Brain and C-Spine MRI confirmed diffuse SAH, bilateral subacute cerebellar SDH, non-enhancing myelitis involving C4-C6 segments, and an anterior spinal SDH extending from C5 to D3. Digital Subtraction Angiography (DSA) findings were highly suggestive of multifocal intracranial vasculitis, with no aneurysms identified. Echocardiography demonstrated impaired left ventricular function (EF 45%), raising suspicion for myocarditis. Additional laboratory results supported autoimmune hemolytic anemia (positive Direct Coombs Test), marked systemic inflammation (CRP 89.4 mg/L; Procalcitonin 10.7 ng/mL on Day 4 post-admission), severe hypoalbuminemia, and evidence of active lupus nephritis (proteinuria, hematuria, pyuria).
- **Hospital Course and Management:**
- Initial Phase & Diagnosis: The patient was initially managed in the Neuro ICU with multidisciplinary input. Treatment included high-dose corticosteroids (Prednisolone 40mg/day), continuation of HCQ, and empiric broad-spectrum antibiotics. The calculated SLEDAI-2K score was 37, indicating high disease activity. Potential overlap syndromes (SLE-Sjogren's due to SS-A+, or MCTD/Overlap given nRNP+ and negative dsDNA) were considered. CNS vasculitis remained the leading suspicion for the neurological events based on DSA.

- Therapeutic Decisions (Flare vs. Infection): Distinguishing between the SLE flare and potential infection was a significant clinical challenge, given the elevated inflammatory markers despite negative blood cultures. However, due to the patient's critical condition and a documented Candida UTI, antimicrobials including appropriate antifungals were continued. Transient clinical stabilization occurred, permitting transfer to a high-dependency unit (HDU) around Day 10 post-admission. A decision was made to escalate immunosuppression, and Rituximab 500mg IV was administered on Day 18 following infection screening.
- Complications & Deterioration: Clinical worsening was observed starting around Day 22 post-admission, despite the Rituximab infusion. Complications included skin issues (intertrigo, potentially related to cutaneous vasculitis). Persistent high fevers developed, accompanied by a further rise in CRP (to 154 mg/L), suggestive of uncontrolled sepsis or refractory inflammation. Progressive pancytopenia ensued (WBC nadir 2.05x10^9/L, Platelets 36x10^9/L, requiring platelet transfusion and GCSF support). Worsening cholestatic liver function and increasing azotemia (Urea 129 mg/dL, though Creatinine remained low at 0.29 mg/dL) were also noted. E. coli was subsequently cultured from urine, in addition to Candida. Antibiotic coverage was broadened again.
- Final Decline: On Day 25 post-admission, the patient experienced hypoxemia and a decreased level of consciousness, leading to ICU readmission, intubation, and mechanical ventilation.
- **Outcome:** As of Day 28 post-admission, the patient remained ventilator-dependent, although hemodynamically stable and off vasopressors. Considering the established multi-organ failure and grim prognosis, and after discussions regarding care goals, the family requested discharge. The patient was transferred via medical transport back to Bhutan for continued supportive care, including broad-spectrum antibiotics and immunosuppression (Prednisolone 30mg, HCQ).

DISCUSSION

This case presents an uncommon and severe array of simultaneous neurological emergencies—SAH, cranial SDH, spinal SDH, and myelitis—arising during a catastrophic multi-system SLE flare. The American College of Rheumatology criteria define the spectrum of NPSLE [3], but this particular constellation is rarely documented. The widespread neurological damage pointed towards a diffuse underlying mechanism. CNS vasculitis, suggested by DSA (with interpretation aided by principles from ASN guidelines [7] and reviews like Magro-Checa et al. [6]), appears central to the pathogenesis. Such vasculitis could plausibly cause both ischemic damage (potentially underlying the non-enhancing myelitis, a finding sometimes associated with inflammatory myelopathies discussed by Flanagan & Weinshenker [10]) and hemorrhagic events, even though SAH as a complication of primary CNS vasculitis is itself infrequent, as noted by Nakajima et al. [8]. Mak et al.'s study highlights the significance of ICH when it occurs in SLE patients [5]. The extensive spinal SDH observed is especially unusual; while rare reports exist of spontaneous spinal SDH in SLE (e.g., Kumar et al. [9]), its occurrence here might be linked to the intracranial events, localized vascular issues, or coagulopathy. Potential contributing roles for underlying Antiphospholipid Syndrome (APLS) (workup initiated based on criteria like Miyakis et al. [14]), the observed mild coagulopathy, or endothelial dysfunction related to severe inflammation warrant consideration, although could not be fully explored. The diagnostic process was fraught with challenges typical in severe SLE cases. The negative dsDNA result during this severe flare, despite prior positivity, highlights the known fluctuations of this marker and the need for a comprehensive clinical and serological picture, as discussed by Pisetsky regarding anti-DNA antibody utility [11]. A major recurring difficulty was distinguishing the intense systemic inflammation of the SLE flare from concurrent sepsis, a common dilemma explored in biomarker reviews by Littlejohn et al. [12]. Ambiguous signals from inflammatory markers like CRP and Procalcitonin complicated decisions about antibiotic use versus the urgent need for potent immunosuppression. Initial neurological findings of flaccid areflexia might have reflected acute spinal shock from myelitis or an early peripheral nerve involvement; subsequent weakness was likely exacerbated by critical illness neuromyopathy, obscuring precise localization over time. Management involved a precarious balancing act between aggressive immunosuppression for the flare and infection control. High-dose steroids were administered, followed by Rituximab, a therapy used in refractory NPSLE according to reviews like Narváez et al. [13], though robust evidence for its use in these specific acute circumstances is limited. A confirmed APLS diagnosis would have introduced further complexity regarding anticoagulation risks versus benefits [14]. Key limitations in this case include the inability to perform lumbar puncture for CSF analysis due to evolving thrombocytopenia, potentially limiting diagnostic insights, and the aforementioned negative dsDNA finding, which complicated standard assessments of SLE activity. Despite deploying advanced therapies like B-cell depletion, the patient ultimately suffered irreversible multi-organ damage, underscoring the severity of this presentation.

CONCLUSION

Severe exacerbations of SLE can precipitate rare and devastating combinations of concurrent neurological emergencies, including SAH, SDH (both cranial and spinal), and myelitis, likely mediated by CNS vasculitis. This case vividly demonstrates the potential for catastrophic, multifocal neurological damage in NPSLE and underscores the significant diagnostic and management hurdles. Essential lessons from this case include the need for heightened vigilance for unusual, simultaneous CNS events during severe SLE flares, and recognition of the critical challenge in differentiating inflammatory activity from infection, which profoundly impacts therapeutic decisions. Effectively managing the high disease activity, controlling infections, navigating treatment-related complications, and supporting failing organs demands intensive, coordinated multidisciplinary care; nonetheless, the prognosis associated with such severe presentations remains extremely poor.

REFERENCES

1. Fanouriakis A, Kostopoulou M, Alunno A, et al. 2019 update of the EULAR recommendations for the management of systemic lupus erythematosus. Ann Rheum Dis. 2019;78(6):736-745.

2. Hanly JG, Harrison MJ. Management of neuropsychiatric systemic lupus erythematosus. Nat Rev Rheumatol. 2020;16(11):659-672.
3. The American College of Rheumatology nomenclature and case definitions for neuropsychiatric lupus syndromes. Arthritis Rheum. 1999;42(4):599-608.
4. Birnbaum J, Petri M. Transverse Myelitis in Systemic Lupus Erythematosus: Clinical Manifestations, Diagnosis, and Treatment. Int J Clin Rheumatol. 2011;6(4):439-451.
5. Mak A, Mok CC, Chu WP, et al. Intracranial haemorrhage in patients with systemic lupus erythematosus: a cohort study. Rheumatology (Oxford). 2009;48(6):654-658.
6. Magro-Checa C, Zirkzee EJ, Huizinga TW, Steup-Beekman GM. Management of Neuropsychiatric Systemic Lupus Erythematosus: Current Approaches and Future Perspectives. Drugs. 2016;76(4):459-83.
7. Mandell DM, Mossa-Basha M, Qiao Y, et al. Intracranial Vessel Wall Imaging: Principles and Expert Consensus Recommendations of the American Society of Neuroradiology. AJNR Am J Neuroradiol. 2017;38(2):218-229.
8. Nakajima M, Kato T, Komatsu K, et al. Primary angiitis of the central nervous system complicated by subarachnoid hemorrhage: A case report and literature review. Medicine (Baltimore). 2018;97(30):e11606.
9. Kumar N, Walker G, Harding M. Spontaneous spinal subdural haematoma in systemic lupus erythematosus. BMJ Case Rep. 2013;2013:bcr2013009421.
10. Flanagan EP, Weinshenker BG. Inflammatory transverse myelitis. Lancet Neurol. 2014;13(2):195-206.
11. Pisetsky DS. Anti-DNA antibodies in systemic lupus erythematosus: predictors of disease activity. Rheumatology (Oxford). 2016;55(5):777-9.
12. Littlejohn EA, Marder W, Lewis EE, et al. Biomarkers to differentiate systemic lupus erythematosus flare from infection: a systematic review. Arthritis Care Res (Hoboken). 2020;72(11):1539-1552.
13. Narváez J, Ríos-Rodriguez V, de la Fuente D, et al. Rituximab therapy in refractory neuropsychiatric lupus: current clinical evidence. Semin Arthritis Rheum. 2011;41(3):364-72.
14. Miyakis S, Lockshin MD, Atsumi T, et al. International consensus statement on an update of the classification criteria for definite antiphospholipid syndrome (APS). J Thromb Haemost. 2006;4(2):295-306.

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