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# Hemoglobinopathy and Systemic Lupus: A Rare Association

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## Abstract

The authors report a case of systemic lupus associated with a composite heterozygosis SC with thalassemic component in a 19-year-old patient hospitalized for anemia and polyarthralgia who has a staturoponderal delay, macular erythematous lesions in butterfly wings on the face and ears, photosensitivity, puffy face, alopecia, pubic and axillary hair loss, scalp dermatophytosis, painful swelling of the interphalangeal joints, wrists and knees. The hemoglobin electrophoresis showed a compound heterozygote SC associated with $\beta$ thalassemia. Antinuclear antibodies were positive with an anti-Sm positive antibody. Conclusion: The diagnosis of both diseases can be difficult when symptoms are concomitant and look alike.

## Keywords

Hemoglobinopathy, Lupus, University Teaching Hospital Point G

## 1. Introduction

Sickle cell disease is an autosomal recessive genetic disorder characterized by the presence of abnormal S-hemoglobin responsible for more or less important vaso-occlusive manifestations. This hemoglobin S is the consequence of a punctual mutation resulting in the replacement in the globin chain of glutamic acid by valine [1]. Its highest frequencies are in sub-Saharan Africa. In Mali, sickle cell disease is a major public health problem with an average frequency of 12% of the Hb S allele according to a North-South gradient [2]. Since 2005, 5000 to 6000

sickle cell births have been recorded in Mali [3] [4].

Systemic lupus is an autoimmune disease characterized by a dysfunction of the immune system. This rare condition affects more often young women.

Lupus, as well as sickle cell disease, is a hemolytic disease. However, their coexistence in the same individual is rarely described.

This report describes a case of association of sickle cell disease and systemic lupus in a young woman, admitted to the Internal Medicine department of the University Teaching Hospital of point G.

## 2. Observation

Miss R B aged 19 hospitalized at the internal medicine department of University Teaching Hospital of point G for anemic syndrome associated with polyarthralgia and warm joint swelling interesting the two handles, both elbows, both knees, metacarpophalangeal and proximal interphalangeal joints making movement difficult without morning stiffness; erythematous-macular cutaneo-mucosal lesions on the face shown in **Figure 1**, ears and the rest of the body aggravated by exposure to the sun in a context of ongoing unquantified weight loss since 2 years.

On physical examination, the patient showed a staturoponderal delay, a conjunctival pallor, erythemato-macular lesions in butterfly wings localized on the face and ears, a photosensitivity, puffy face, alopecia shown in **Figure 2**, fall the pubic and axillary hair, scalp dermatophytosis, painful swelling of the interphalangeal joints, wrists, and knees and splenomegaly of 10 cm from the left costal margin with lymphadenopathy about 3 centimeters, consistency firm, painless, mobile, left sub-mandibular, bilateral supraclavicular, bilateral axillary and bilateral inguinal.

The hemogram noted an anemia at 6.1 g/dl, normocytic (MGV = 87 fl), normochromic, non-regenerative (Reticulocytes = 34,000/mm$^3$). It was a hemolytic anemia because of the haptoglobin rate at 0.06 g/L (N = 0.35 - 2.5 g/l) the lactodeshydrogenase level at 1026 IU/l (N = 200 - 600 IU/l) and an indirect hyperbilirubinemia at 0.22 mg/dl with the positive IgG at direct Coombs test.

**Figure 1.** Malar erythema.

The hemoglobin electrophoresis showed an Hb S at 47.1%, Hb C at 42.1%, Hb F at 6.5% and Hb A2 at 4.3%. (Composite heterozygous SC associated with $\beta$-thalassemia).

Serology (HIV serology, hepatitis B and C viral serology) were negative.

Chest radiography was normal. Wrists, elbows, and knees X-rays showed bone demineralization that can be seen in Figure 3.

Abdominopelvic ultrasound, apart from splenomegaly, was normal.

C3 (0.45 g/l, N: 0.82 - 1.93) and C4 (0.06 g/l, N: 0.10 - 0.40) fractions of sera complement were low and proteinuria was absent. Antinuclear antibodies (10.82 IU/ml, N < 1)) were positive with anti Sm antibody (20 IU, N < 10).

The diagnosis of systemic lupus associated with SC composite heterozygosis

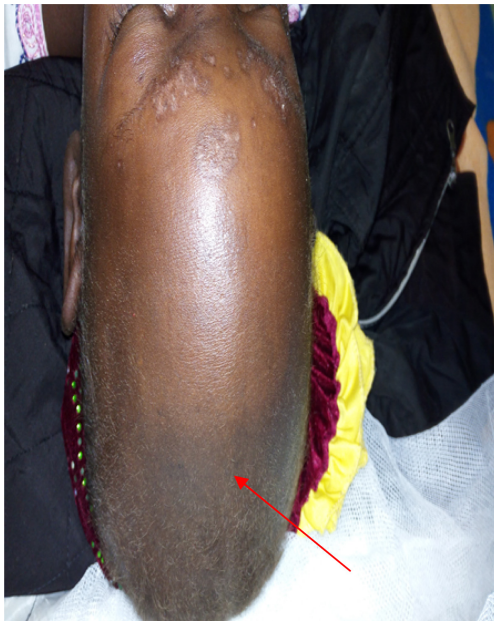

Figure 2. Alopecia.

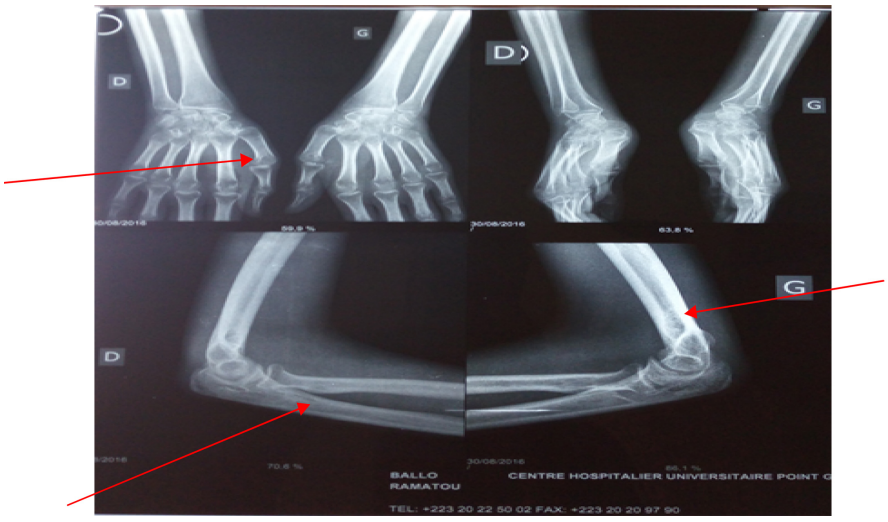


Figure 3. Bone radiograph of wrists and elbows: shows bone demineralization.

with thalassemic component was finally retained.

Corticosteroid therapy was initiated for the patient based on oral (prednisone) at a dose of 30 mg/day, which was reduced to 5 mg/day with adjuvant therapy and on antimalarial synthesis drug (hydroxychloroquine) with two tablets of 200 mg per day.

The evolution was favorable with the decrease of painful crisis and lupus symptomatology (general signs, joint symptoms, and the tumor syndrome).

## 3. Discussion

Mali is located in West Africa, in the area of distribution of hemoglobin S. A center for research and fights against sickle cell disease was created in Bamako; this allowed the diagnosis of a large number of hemoglobinopathy with even early diagnosis.

Few studies show the association between rheumatological pathology with hemoglobinopathies.

Robazzi *et al.* [5] in 2012, counted 45 cases of association between sickle cell disease to lupus. Other studies [6] [7] [8] [9] [10] also showed this association in the literature with 56 cases as of July 2017. Despite this association, it is rarely reported. These pathologies have in common clinical symptoms except cutaneous lesions not described in sickle cell disease and ulcer of limps not described in lupus. The prevalence of this association is not known because most of them are reported cases.

Pathogenically, the lack of activation of the alternative complement pathway observed during sickle cell disease leads to a reduction in the elimination of antigens responsible for the formation of immune complexes that may be responsible for the emergence of autoimmune diseases [11] [12], although data are missing to confirm this hypothesis.

Three studies have described the production of antinuclear antibodies (ANA) between 17.3% and 48.9% [13] [14] [15] in patients with sickle cell disease than the rest of the population. They also suggested the role of certain factors such as genetics or environmental causes that may favor the production of these antibodies. Very few studies have investigated the occurrence of autoimmune diseases, especially lupus in this field [16] [17] [18] [19]. Thus, the prevalence of native anti-DNA antibodies is poorly known because most studies are reported cases. Therefore, other studies are still to be done.

We have described the case of a patient for whom the diagnosis of hemoglobinopathy and lupus with high activity index (SLEDAI = 20) simultaneously. What would have helped with this is already the epidemiology of the two diseases, which tends to be superimposed particularly in our skies at this age, but also the clinical similarity of the two affections. Cutaneous lesions were directing to lupus while the hand-foot syndrome history in childhood to sickle cell disease. The late discovery of sickle cell disease could be explained by the low level of education of the population but also the social level.

## 4. Conclusion

The diagnosis of both diseases can be difficult when the symptoms are concomitant and similar. Osteoarticular pain is a very common sign in these two conditions.

## Conflicts of Interest

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

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