
Pyelonephritis in adult women with homozygous sickle cell disease: about 42 cases

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Abstract: Sickle cell disease is a condition with 3 parts of speech including infectious complications. They are essentially encapsulated bacterial organisms. There is a significant incidence of urinary infections to adults with sickle cell disease most particularly among women. The frequency and characteristics of pyelonephritis in women with sickle cell disease is poorly understood to this day, it seemed interesting to analyze over a period of one year, the profile of sickle cell patients followed in the genetic disease unit of red blood cell Hospital Henri Mondor, Créteil, and who took at least one episode of pyelonephritis. Patients and Methods: This study was conducted in the genetic disease unit of red blood cell (UMGGR) Hospital Henri Mondor in Créteil (France). This is a retrospective descriptive and analytical study on patients with homozygous sickle cell disease, females, aged 18 years or more. The selection was conducted over a period of one year from February 2007 to February 2008. Data were collected from medical records and from reports of record of each patient. We considered the clinical, paraclinical and therapeutic latest episode of pyelonephritis. Data processing was done using the software Statview. Results: The prevalence of pyelonephritis in women with sickle cell disease aged over 15 years was 6.12% annually. The median age at first episode of pyelonephritis was 23.5 years. The majority (71.42%) was the first episode after 20 years. Among the factors predisposing to pyelonephritis, pregnancy has been implicated in 16.7% of cases. The symptoms of cystitis, with 52.4%, were the fact favoring predominant. The average number episodes of pyelonephritis to our patients were 2. The risk of recurrent pyelonephritis was significantly correlated statistically with the presence of cholelithiasis ($p = 0.04$). Fever was the clinical symptoms that prompted the consultation in 95.24% cases. The consequences of sickle cell disease were important. We identified 16.7% cases of sepsis and 16.7% of worsening anemia requiring transfusion. The causative agent was *E. coli* in 85.7% of patients. 61.9% of patients received combination therapy. The intravenous therapy as first-line was found in 81%. Fluoroquinolones were the molecules widely used in 71.4% of cases. The rate of clinical failure at 3 days of antibiotics was 4.76%. The average time for obtaining apyrexia was 3 days. The average duration of treatment was 15 days. We observed no cases of death secondary to the episode of pyelonephritis. Conclusion: This preliminary work has highlighted the incidence of pyelonephritis in women adult with sickle cell and the the potential impact on sickle cell disease. Despite being underestimated because of the retrospective nature and short duration (1 year) of study, this frequency must motivate strategy to encourage more active educational preventive towards patients and early diagnosis of urinary tract infections to women with sickle cell disease.

Keywords: Pyelonephritis, Adult Women, Homozygous Sickle Cell Disease

1. Introduction

Sickle cell disease is an autosomal recessive disease caused by a single globin β gene mutation, timely, located on

chromosome 11 (11p 11-5).

It exists for sickle cell disease, different genotypes: homozygous SS (70%), compound heterozygous SC (25%), S beta thalassemia (5%) asymptomatic subjects AS.

It is a condition with three parts of speech: Chronic hemolytic anemia that can worsen, the vascular-occlusive complications: painful bone vascular-occlusive crises (VOC, ACS...), infectious complications: they are essentially encapsulated bacterial organisms. The risk of infection is high to children before 5 years but, to adults, it is the second leading cause of death after vascular-occlusive events [1].

There is a significant incidence of urinary tract infections and pyelonephritis in adulthood among the major sickle cell disease especially among women.

Pyelonephritis may result to vascular-occlusive complications, worsening of anemia, but also remote locations tanks into play with the prognosis especially during pregnancy (both maternal than fetal side), but also effects on the level of renal function.

The frequency and characteristics of pyelonephritis in women with sickle cell disease is poorly understood to this day, It seemed interesting to analyze over a period of one year, the profile of sickle cell patients followed in the genetic disease unit of red cells to the Hôpital Henri Mondor, Créteil (France), and who took at least one episode of pyelonephritis.

The overall objective of this work is to determine the characteristics of pyelonephritis in women with sickle cell disease most aged 18 years and over. Specifically, we attempt to clarify the factors influencing the recurrence and the impact on sickle cell disease.

2. Patients and Methods

This study was conducted in the genetic disease unit of red blood cell (UMGGR) Hospital Henri Mondor in Créteil (France).

This is a retrospective study of patients with homozygous sickle cell disease, females, aged 18 years or more, followed in the service of genetic diseases of red cell Henri Mondor Hospital.

The selection was conducted over a period of one year from February 2007 to February 2008: Data were collected from medical records and from reports of record of each patient.

We considered the clinical, paraclinical and therapeutic parameters of the latest episode of pyelonephritis.

All patients have benefited from the realization of a blood culture with antibiogram.

Data processing was done using the software Statview. We used the test khi2 in univariate analysis with a confidence interval at 95% and a significance threshold of 0.05%

3. Results

The median age at first episode of pyelonephritis was 23.5 years. The majority of our patients (71.42%) had the first episode after 20 years.

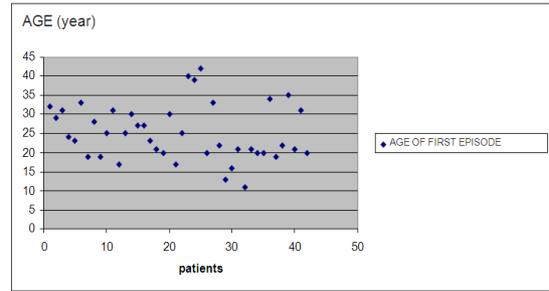


Figure 1. Age at first episode of pyelonephritis.

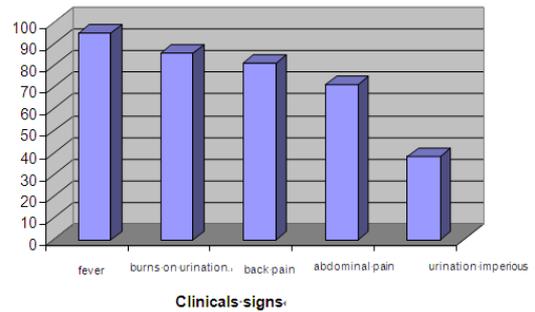


Figure 2. clinical signs of pyelonephritis.

Fever was the clinical symptoms that prompted the consultation in 95.24% cases, followed by burning urination in 85.7%

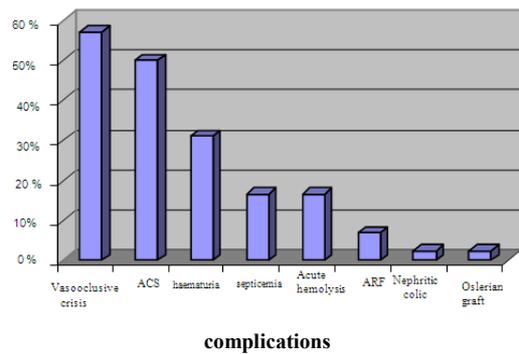


Figure 3. Complications observed.

ACS: Acute chest syndrome

ARF: Acure Renal Failure

Pyelonephritis have caused a vascular-occlusive crisis (VOC) in over half of our patients (57.1% of cases), acute chest syndrome (ACS) in 50% cases.

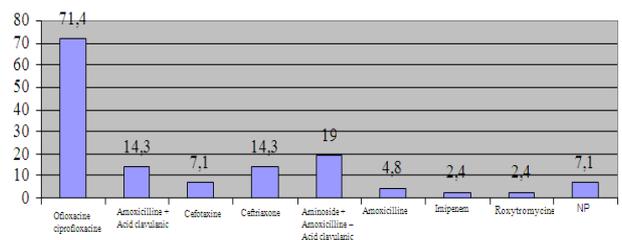
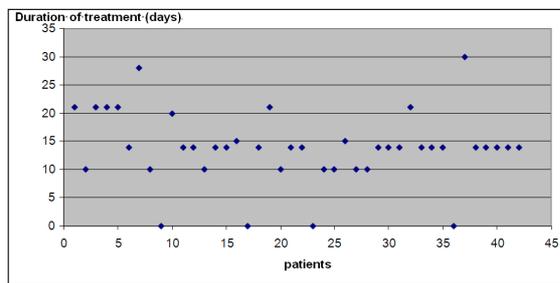


Figure 4. Antibiotic treatment.

The molecules widely used were fluoroquinolones in 71.4% of cases. Aminocyclitolides in combination with Amoxicilline + Acid Clavulanic came in second with 19%.



organism in all series in nearly 85% of cases [8, 12, 14, 15].

The majority of our patients have been supported in an emergency department in the early events.

The average time elapsed between the onset and consultation as noted throughout the medical records was 48 h.

61.9% of patients received combination therapy against 31% of monotherapy. The intravenous therapy as first-line is found in 81% of cases against 19% of oral treatment. The molecules widely used were fluoroquinolones in 71.4% of cases. Aminocyclitol in combination with Amoxicilline + Acid Clavulanic came in second with 19%. Our results corroborate those of De Pont AC et al. [9]. We believe that this is a field subject to multiple complications; this has guided the choice of antibiotic therapy. This therapeutic approach is consistent with the guidelines of the "Infectious Disease Society of America", where monotherapy with a fluoroquinolone is recommended as first-line patients with uncomplicated pyelonephritis and dual therapy in combination with aminocyclitol in case of complications.

We noted 2 cases of pyelonephritis to *E. coli* resistant to fluoroquinolones including 1 case treated with imipenem. The rate of clinical failure at 3 days of antibiotic therapy, observed in our series (4.76%) is superimposed on that found in the literature [11]. The average time for obtaining apyrexia was 3 days similar to literature data in the general population [15]

The average duration of treatment was 15 days, with extremes of 10 days and 30 days. The majority of our patients were treated during 14 days. This is in agreement with literature data [13, 14, 15].

We observed no cases of death secondary to the episode of pyelonephritis. The speed of care could explain the absence of adverse developments.

5. Conclusion

This preliminary work has highlighted the incidence of pyelonephritis to women adult with sickle cell disease and the potential impact on sickle cell disease.

Pyelonephritis to adult women with sickle cell disease is responsible for severe vaso-occlusive crisis with acute chest syndrome. It leads a risk of spontaneous abortion during the pregnancy. The treatment need hospitalization and based on association of antibiotic therapy dominated by fluoroquinolones.

Despite being underestimated because of the retrospective nature and short duration (1 year) of our study, this frequency should encourage a more active preventive educational strategy towards patient (there are books on the conduct taken to prevent urinary tract infections) and early diagnosis of urinary tract infections.

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