Case reports

Nephrotic syndrome revealing secondary syphilis in a 23-year-old student in sub-Saharan Africa and review of the literature

Abstract

Nephropathy is one of the potential clinical manifestations of secondary syphilis.

We report the case of a 23-year-old student with progressive bilateral glaucoma, who consulted nephrology for oedemato-ascitic syndrome. Clinical and laboratory examination revealed painless generalized edema, syphilitic roseola, massive proteinuria (10.26 g/24h), severe hypoalbuminemia (16.2 g/l) and hypercholesterolemia. The diagnosis of nephrotic syndrome secondary to syphilis was made, confirmed by positive serology (VDRL and TPHA). After four weeks, significant regression of proteinuria (140mg/24h) and normalization of biological parameters were observed. This case illustrates the importance of early diagnosis and appropriate treatment of nephrotic syndrome secondary to syphilis, enabling rapid and complete recovery.

Key words: nephrotic syndrome, secondary syphilis, proteinuria.

Introduction

Syphilis is a sexually transmitted infection caused by Treponema pallidum [1]. It evolves in three phases: primary (chancre), secondary (treponemal septicemia) and tertiary (neurological and cardiovascular complications). Syphilis has been on the increase in recent years. According to the World Health Organization, therehas estimated the number of new cases of syphilis worldwide at 7.1 million in 2020 [2]. In 2022, the UK recorded a 15.2% increase in syphilis cases compared with 2021, the highest since 1948 [3]. In Africa, its prevalence is around 7.36% among blood donors in Mali [4] and 3.7% among pregnant women in a study in Ethiopia [5]. In Burkina Faso in 2011, a study carried out in prisons and another in pregnant women found respective prevalences of 5.7% and 1.7% [6,7]. The clinical manifestation of syphilis is polymorphic, with systemic involvement. Renal involvement is not uncommon in syphilitic infection. Several cases of renal damage have been described in the literature, the most common clinical manifestation being nephrotic syndrome [8-11]. We report a case of nephrotic syndrome in a young adult with secondary syphilis.

Case description

We report the case of a 23-year-old student with seven years' progressive bilateral glaucoma, protected against viral hepatitis B by the vaccine. He came to the nephrology department with edemato-ascitic syndrome, and facial puffiness that had been evolving for about seven days in a non-febrile context.

On initial clinical examination, the patient was found to be in Stage 1performance statusof WHO general condition, with coloured anicteric conjunctivae and oedemato-ascitic syndrome, with oedema extending up to the thighs, soft, bucketing, painless and declining, painless, mobile cervical and inguinal adenopathies of varying sizes, the largest of which was 1 cm long, blood pressure 127/78 mm Hg, pulse 80 beats per minute, weight 71 kg, urine dipstick showed 3 crosses of albumin.

Dermatological examination revealed erythematous, scaly lesions on the palms and soles of the feet, with no endooral lesions, genital ulcerations or nail involvement (fig).

the examination of the rest of the systems was normal.

laboratory results and kidney ultrasound

Laboratory resultsrevealed 24-hour proteinuria was 10.26g/24h, hypercholesterolemia with total cholesterol of 7.75 mmol/l, LDL cholesterol of 6.33 mmol/l, serum protein

electrophoresis showed severe hypoalbuminemia of 16.2 g/l, hypoprotidemia at 44g/l, hyper-alpha 1 and 2 microglobulin and hyper-beta 2 and gamma microglobulin, serum creatinine at 105umol/l, CRP 10.79g/l, hemoglobin 12.8 g/dl, other blood cell lines normal, normal blood ionogram, normal levels of transaminases and prothrombin, urine cytobacteriological examination revealed three albumin crosses and two red cell crosses, and renal ultrasound revealed normal kidney appearance.

The diagnosis of an impure nephrotic syndrome was evoked.

Clinical and paraclinical examinations for etiological and therapeutic purposes revealed the following: otorhinolaryngological and stemmatological examination didn't find any source of infection.

. The Venereal Disease Research Laboratory (VDRL) was positive with a title of two international units, and the Treponema Pallidum Hemagglutination Assay (TPHA) was positive with a title of 1280international units.anti-HCV antibodies and HBsAg (HBs antigen)were negative, the HIV-serology test was negative by Elisa test, and abdomino-pelvic ultrasound revealed normal-sized, differentiated kidneys with ascites and a small pleural effusion. Immunological tests such as complement tests, PLA2R antibodies and anti-nuclear antibodies could not be performed, nor could a renal biopsy for histological diagnosis.

The diagnosis of impure nephrotic syndrome secondary to secondary syphilis was accepted.

Our initial management was:

- *Benzathine benzylpenicillin* 2.4 MIU intramuscular injection once a week for three weeks
- *Rivaroxaban 10 mg* 1 tabletdaily
- *Ramipril 2.5 mg* 1 tablet daily for its antiproteinuric role
- *Spironolactone 50 mg* one tabletdaily
- *Atorvastatin 20mg* 1 tabletdaily.

Two weeks after the introduction of treatment, the patient weighed 58 kg without oedema, with 24-hour proteinuria at 460mg/24h (0.29g/l), serum albumin at 29.1g/l and total protein at 62g/l.

At four weeks we still had regression of proteinuria to 290mg/24h, and no oedema or syphilitic roseola. All treatment was stopped at the fourth week and we began the monitoring phase.

After two months of monitoring, the patient's clinical evaluation was normal, and the biology revealed 24-hour proteinuria at 140mg/24h (0.09g/l), serum albumin at 40.1g/l, total proteins at 70g/l, and creatinine levels were still normal.

Discussion

Syphilis is caused by Treponema pallidum, and this germ can lead to a variety of renal manifestations, the most widely described of which is nephrotic syndrome. The mechanisms most often involved are the formation and deposition of immune complexes in the glomeruli, activating inflammation and causing glomerular damage. Histological studies have shown lesions of membranoproliferative glomerulonephritis (MPGN) and extramembranous glomerulonephritis (EMG), rarely extracapillary glomerulonephritis and tubulointerstitial damage linked to Treponema pallidum infection [8-12]. In our case, histology could not be performed due to insufficient technical resources.

Positive diagnosis of treponemal infection in our context is a priority, as it would enable efficient management with satisfactory responses. The non-specific clinical presentation of nephrotic syndrome can lead to delays in diagnosis. Studies have shown that late diagnosis of syphilis can lead to severe renal complications, hence the need to insist on screening for syphilis in nephrotic syndrome, even in children, as we are faced with early sexuality and an upsurge in venereal pathologies [13,14]. Our case proves this, following the diagnosis of syphilis in a 23-year-old boy.

Syphilis is treated with beta-lactam antibiotics, namely penicillin G by injection, which eradicates treponema, which is less resistant to this class of antibiotics [10,15,16]. Treatment of nephrotic syndrome should be symptomatic, as etiological treatment can improve the various renal manifestations. The literature has shown that the majority of cases had complete remission of proteinuria and improvement of other clinical and biological symptoms with well-managed treatment.

This case study reminds us that, despite the rarity of nephrotic syndrome secondary to syphilis, infection should always be suspected, especially in at-risk populations. Early diagnosis and management are essential to avoid renal complications. This approach must include systematic diagnosis of sexually transmitted infections in cases of renal damage, particularly nephrotic syndrome.

Conclusion

Nephrotic syndrome is a renal pathology with a variety of etiologies. Infectious causes are not uncommon. Syphilis is one of the least described causes in the literature. This case of nephrotic syndrome (NS) secondary to treponemal infection is highly instructive, highlighting a number of practical nephrological aspects. In the event of a sudden onset of nephrotic syndrome in an adolescent or young person, we must always consider a venereal infection, such as syphilis, which is increasingly prevalent, especially in Africa.

Consent

we have obtained the patient's verbal and written consent for the use of the data collected

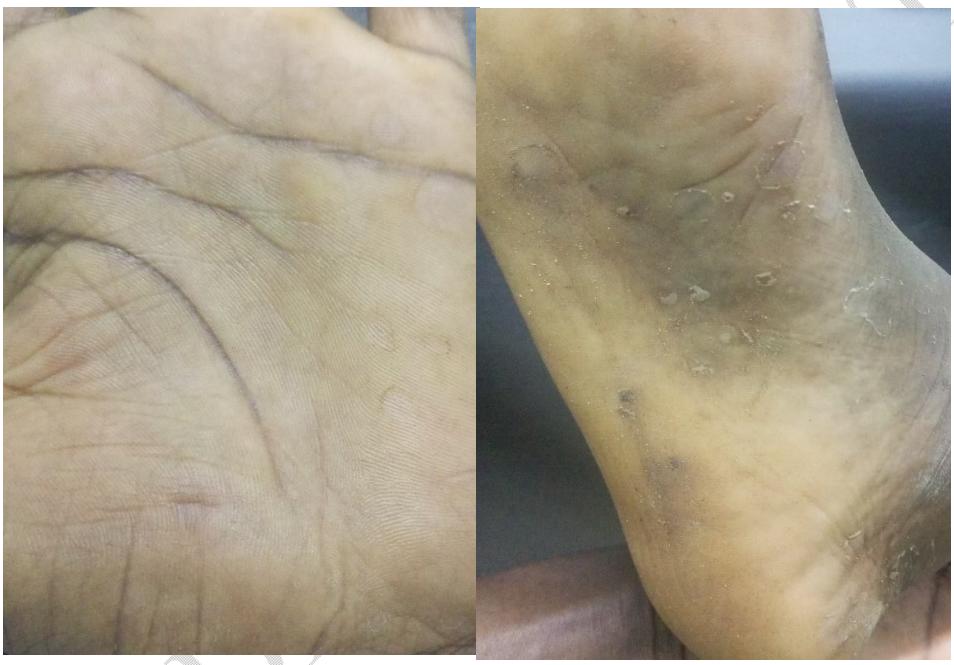

Fig: syphilitic roseola on palmar and plantar areas

References

1. Thorburn AL. Fritz Richard Schaudinn, 1871-1906: protozoologist of syphilis. Sexually Transmitted Infections. 1971 ;47(6):459-61.

2. World Health Organization. Sexually transmitted infections (STI) [Internet]. 2023. Available at: https://www.who.int/fr/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis)

3. Charles Roncier, Number of STIs to rise significantly in England by 2022 [Internet]. vih.org. 2023. Available at: https://vih.org/20230703/nombre-dist-en-hausse-significative-en-angleterre-en-2022/

4. Coulibaly DS, Coulibaly K, Kodio S, Samake D, Konaté I, Sangaré D, et al. Prevalence of HIV, Viral Hepatitis (B and C) and Syphilis among Blood Donors in 2017 in Ségou. Health Sci Dis. 2021 ;22(7).

5. Melku M, Kebede A, Addis Z. Magnitude of HIV and syphilis seroprevalence among pregnant women in Gondar, Northwest Ethiopia: a cross-sectional study. HIV AIDS (Auckl). 2015; 7:175-82.

6. Diendéré EA TH, Bognounou R OD, Simporé J OR, Drabo J. Prevalences and factors associated with Human Immunodeficiency Virus and Hepatitis B virus infections, syphilis and bacilliferous pulmonary tuberculosis in prisons in Burkina Faso. Tropical Medicine. 2011 ;71(5):464-7.

7. Kirakoya-Samadoulougou F, Defer MC, Yaro S, Fao P, Ilboudo F, Langani Y, et al. Low seroprevalence of syphilis in Burkina Faso. Sexually Transmitted Infections. 2011 ;87(1):35-7.

8. Inayat F, Almas T, Bokhari SRA, Muhammad A, Sharshir MA. Glomérulonéphrite membraneuse comme une présentation peu commune de la syphilis secondaire : A Reminder on TherapeuticDecision-Making in Clinical Practice. Journal of Investigative Medicine High Impact Case Reports. 2020;8 :2324709620967212.

9. Yang CC, Chen JY, Chang HY, Sheu MJ, Feng IC, Wang SH, et al. Cholestatic Hepatitis with Concomitant Nephrotic Syndrome due to Secondary Syphilis in a Young Man. Case Rep Gastroenterol. 2024;18(1):136-43.

10. Zhang Z, Hever A, Bhasin N, Kujubu DA. Secondary syphilis associated with membranous nephropathy and acute hepatitis in an HIV-positive patient: A Case Report. Perm J. 2018; 22 :17-062.

11.Qi A, Fiset PO, Pilozzi-Edmonds L. Syphilis-related rapidly progressive glomerulonephritis: a case presentation. BMC Nephrol. 2021;22(1):196.

12. Sølling J, Sølling K, Jacobsen KU, Olsen S, From E. Circulating immune complexes in syphilitic nephropathy. A case report. Br J Vener Dis. 1978;54(1):53-6.

13. Fan SL, Landgren A, Ruderman I. Syphilis as the great mimicker: A case of full-house pattern membranous nephropathy. Nephrology. 2024;29(1):18-20.

14. Scaperotti MM, Kwon D, Kallakury BV, Steen V. Not all that is 'full house' is systemic lupus erythematosus : a case of membranous nephropathy due to syphilis infection. BMJ Case Rep. 2021;14(8):e244466.

15. Hazue R, Ueno T, Nozaki H, Kinowaki K, Ohashi K, Hoshino J, et al. Syphilis-associated membranous nephropathy successfully treated with amoxicillin. Clin Nephrol. 2021 ;96(5) :297-301.

16. Handoko ML, Duijvestein M, Scheepstra CG, De Fijter CWH. Syphilis: a reversible cause of nephrotic syndrome. Case Reports. 2013 ;2013(feb08 1) : bcr2012008279□bcr2012008279