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Case Report

Kawasaki Disease and Pyelonephritis: A Case Report

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ABSTRACT

Kawasaki disease is a form of vasculitis, mainly in small and medium-sized arteries of unknown origin, and often occurs in childhood. It is the leading form of heart disease acquired in childhood in developed countries. Pyelonephritis is not usually associated with Kawasaki, but hereby we represent a case of Kawasaki disease associated with pyelonephritis; however, we can't say whether pyelonephritis had a role in stating Kawasaki and it could be a proper and valuable topic for research.

Keywords: Kawasaki disease, Pyelonephritis, Child, Omit

Introduction

Kawasaki disease is a form of vasculitis, mainly in small and medium-sized arteries of unknown origin, and often occurs in childhood. It is the leading form of heart disease acquired in childhood in developed countries, and if left untreated, it leads to complications of coronary artery aneurysms in approximately 25% of cases [1]. Although the etiologic agent has not been discovered, the evidence appears overwhelming that a microbial agent is a responsible trigger for this multisystem disease [2]. Tomisaku Kawasaki published the first English-language report of 50 patients with Kawasaki Disease (KD) in 1974 [3] and its exact pathology is still unknown. Kawasaki disease (infantile acute febrile Mucocutaneous Lymph Node Syndrome (MCLS) is now a well-established clinical entity affecting mainly infants and young children [4]. The mucous membrane, skin, lymph nodes, and cardiac system are the main sites of involvement. In addition, neurological complications have also been reported in this disease [4]. Though the exact etiology of KD is unknown, it is considered to have an infectious trigger

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Table 1. Vital signs of the patient

Vital Sign RR (/min)	Checked Value
PR (min)	27
PR (min)	117
T (°C)	38.9
SpO^2 (%)	98

Abbreviations: RR, respiratory rate; PR, pulse, rate; T: temperature; SpO^2, oxygen saturation in pulse oximetry.

Table 2. Laboratory results of the patient

Test	Result
WBC (/mcL)	14800
Neutrophil (%)	60
Lymphocyte (%)	34
Hemoglobin (g/dL)	10.5
Platelet (per microliter)	529
ALT (IU/L)	18
AST (IU/L)	32
ALP (IU/L)	568
ESR 1 (mm/h)	140
ESR 2 (mm/h)	68
CRP (mg/L)	97
BUN (mg/dL)	32
Creatinine (mg/dL)	0.3
Urinalysis	
Protein	1+
WBC (/HPF)	Many
RBC (/HPF)	2-3
BAC (bacteria)	Moderate
Urine culture1 (time of admission)	E. coli 100000
Urine culture 2 (48 h after treatment)	Negative

WBC: white blood cell; ALT: alanine aminotransferase; AST: aspartate aminotransferase; ALP: alkaline phosphatase; ESR: erythrocyte sedimentation rate; CRP: C-reactive protein; BUN: blood urea nitrogen; RBC: red blood cell.

followed by the activation of the immune system in a genetically susceptible individual. This theory is also supported by the results of epidemiological studies [5].

Case

The patient was a 4-month-old girl born after uncomplicated normal vaginal delivery without any growth or developmental defect. She, the second child of the family, weighed 6100 g and was 63 cm tall (50%-75%) at presentation. The parents were not relatives and no notable disease existed in the family. She was admitted with fever and restlessness, elevated erythrocyte sedimentation rate (ESR) (140), and C-reactive protein (CRP) (97) without marked leukocytosis. She had 3 episodes of vomiting without any diarrhea and recent respiratory infections or gastrointestinal infections. In the general physical exams, she was restless and to some extent ill. On clinical examinations, no source of infections (normal physical examination, negative cultures except urine culture and normal imaging studies) was observed, and Table 1 lists vital signs. The paraclinical studies revealed increased C-reactive protein, leukocyte count, and pyuria taken from the catheter, and nitrite was positive. Table 2 presents the rest of the laboratory results. We started antibiotic therapy with cefotaxime due to the urinary infection. Although we started antibiotic therapy the fever continued for two more days and in these two days, the urine analysis became better and on the third day, it was totally clear. The catheter sampling method which was taken from the bladder, was against urethritis and then pyuria remained stable. During the examination of the infant, we accidentally noticed the murmur of the infant despite the fever and requested an echo and heart consultation. We tried to do echocardiography and the result was vital. A significant enlargement existed in the left marginal coronary artery and the probable diagnosis was Kawasaki disease. With this, we started the therapy with methylprednisolonepuls and then Intravenous Immune Globulin (IVIG), and the following echocardiography, the size reduced and the fever disappeared. And the patient went into follow-up progress at 2 and 8 weeks and no signs of relapse or new abnormal elements were observed in echocardiography or lab data. In addition, Dimercaptosuccinic Acid (DMSA) was performed in this patient because it had Ecoli with a high colonic count in the sterile urine sample which resulted in decreased uptake of the right kidney and had parenchymal involvement, which confirmed pyelonephritis, and a voiding cystourethrogram (VCUG) was requested.

Discussion

Kawasaki disease (KD) is sometimes confused with urinary tract infection (UTI) because both can present with pyuria and C-reactive protein (CRP) elevation [6]. SeungBeom Han and Soo-Young Lee also worked on this topic and tried to develop criteria to help differentiate between these two [6] The active kawasaki sediment is caused by urethritis and is usually nitrite negative and pyuria sterile but in this case, the patient had a positive nitrite test on urinalysis specific for bacterial urinary tract infection. Additionally, white blood cell clumps were seen in microscopic urinalysis, which renders the possibility of bacterial urinary tract infection. However, Han et al concluded that the urinary nitrite test is more specific for urinary tract infections than KD [6]. Shengling Jan also worked on a retrospective cohort study on the bacterial pyuria in Kawasaki patients which led to the fact that the pyuria in Kawasaki is not always sterile and it can bacterial, but they cannot say whether the Kawasaki causes the bacterial pyuria or the UTI started the Kawasaki itself [7]. Likewise, some authors argue while UTI is documented in some KD patients, it is unclear whether UTI solely without a coexisting infection can induce the immune response leading to KD. However, based on the consensus that KD may manifest in genetically susceptible patients following an infection, UTI cannot be ruled out as an eliciting factor of KD [8].

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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