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CASE REPORT
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From Clinical Suspicion to Diagnosis: A Case Report of Three Siblings Diagnosed with Scarlet Fever at a Family Health Centre

Dilara Canbay Özdemir[1](ID), İzzet Fidancı[1](ID)

[1]Ankara Pursaklar District Health Directorate, Ankara, Türkiye
[2]Hacettepe University Faculty of Medicine, Department of Family Medicine, Ankara, Türkiye

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Abstract

Scarlet fever is an eruptive disease caused by *Streptococcus pyogenes* and is particularly common in children. It highlights the importance of the role of general practitioners in the rapid diagnosis and treatment of scarlet fever. The diagnosis was made based on clinical findings, characteristic rashes, and strawberry tongue, and appropriate antibiotic treatment was started. The course of the cases and the initial assessment at the family health center demonstrate the need for recognition of scarlet fever in primary care to prevent complications and community transmission through early intervention. In this case, the holistic perspective of family doctors in primary care, diagnosis, treatment, and follow-up processes with multidisciplinary thinking are discussed through the cases of scarlet fever developing simultaneously in siblings living in the same house.

Keyword: Scarlet fever, *Streptococcus pyogenes*, rash, family practice

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Address for correspondence/reprints:

Dilara Canbay Ozdemir

Telephone number: +90 (538) 814 79 57

E-mail: dilara.canbay7@gmail.com

INTRODUCTION

Scarlet fever (scarlatina) is a contagious, acute illness brought about by group A beta-hemolytic streptococcus (*Streptococcus pyogenes*) that appears mostly in children between 5 and 15 years of age. Scarlet fever is spread by droplets of respiratory secretions and is quickly transmitted where human contact is close, e.g., schools and daycare centers (1, 2). Clinically, the illness begins with the acute onset of fever, pharyngitis, diffuse erythematous rash with a sandpaper feel, and classic "strawberry tongue." The rash usually initiates in the axillary, cervical, and thoracic areas and generalizes later (3).

Pathogenesis is largely mediated through erythrogenic exotoxins elaborated by the bacteria, causing the rash and systemic symptoms. Diagnosis is usually clinical but may be augmented by rapid antigen detection testing (RADT) or throat culture. Treatment with antibiotics and diagnosis early enough are significant to avoid complications like acute rheumatic fever and post-streptococcal glomerulonephritis (4, 5).

In the past several years, there has been a recent resurgence in the number of scarlet fever cases in countries like the United Kingdom and China, once again highlighting the epidemiological significance of this infection in children (6, 7). Family medicine practitioners and other primary care doctors must consider scarlet fever when making a differential diagnosis of febrile rash illness in a child. Moreover, collective screening of family members can also help in the identification and control at an early stage.

This article reports two concurrent pediatric cases of scarlet fever in siblings living in the same home. With these cases, we would like to highlight diagnostic, therapeutic, and follow-up strategies relevant to family practice.

CASE

Two girls, aged five and seven, presented themselves at a family health center, having experienced symptoms including sore throats and fevers. The two developed the symptoms two days before coming to the clinic, the child aged five years, and five days before the one aged seven. Both had fevers ranging from 38°C, based on parents' reports at home. Both children's medical histories were uneventful, without any chronic illnesses or ongoing medications known. They both had complete and up-to-date vaccination schedules. It was noted that the seven-year-old had attended a dermatology outpatient department before for the rash and had received valacyclovir and a topical preparation. Not having improved, she re-presented to dermatology three days ago and was prescribed another topical preparation. On further questioning, it was found that the children's 12-year-old brother was also complaining of a sore throat. Tonsillitis was found on examination, but this patient did not have strawberry tongue or a rash.

Physical examination revealed bilateral tonsillar enlargement with exudates, blanching papular rashes on the trunk and back, and classic "strawberry tongue" in both patients (Figure 1A-B). Systemic examination findings were within normal limits.

Both children were prescribed a ten-day course of oral amoxicillin, and home isolation was recommended. Clinical improvement and symptom resolution were confirmed in all cases by phone follow-up.

Figure 1. Strawberry tongue appearance in two pediatric patients with scarlet fever. (Figure 1A is the tongue of a 7-year-old patient, and Figure 1B is that of a 5-year-old sibling.). Both tongues have diffused erythema and hypertrophic, enlarged papillae—changes that are pathognomonic for scarlet fever and are manifestations of streptococcal toxin-mediated inflammation

DISCUSSION

Scarlet fever, which is induced by Group A Streptococcus (GAS), is an extremely infectious, toxin-mediated disease that mostly affects children aged 5 to 15 years. In spite of efficacious antibiotics, the disease still generates outbreaks and is a public health issue because it has a high potential for transmission and also due to its complications, such as acute rheumatic fever and post-streptococcal glomerulonephritis (1, 2).

Its classic clinical presentation—fever, pharyngitis, "strawberry tongue," and disseminated, blanching erythematous rash—is still a useful clinical diagnosis criterion, especially in regions where laboratory facilities are lacking (4).

In the present case series, two siblings presented together with classical symptoms and characteristic exanthema. The common household and simultaneous onset of symptoms heavily suggest intrafamilial transmission, highlighting the infectious character of the disease and the risk of outbreaks in closed populations such as families, schools, and kindergartens. This argues in favor of early recognition and reporting, particularly in primary care, where such clusters usually first become evident. What is most educative in this series of cases is the fact that one of the children was first misdiagnosed in a dermatology clinic, the rash being given a viral or allergic etiology. This is actually typical of a common clinical pitfall: under-recognition of scarlet fever as part of the differential diagnosis of childhood exanthems, particularly in a setting where streptococcal infections are not deemed as frequent or in the instance of incomplete presentation. These delays in diagnosis not only lengthen the illness course but also allow continued transmission both within households and in the community.

Such examples highlight the invaluable function of the primary care clinicians, who are best placed to discern patterns among family members and relate individual presentations to more generalized epidemiological hints.

The contextual and holistic evaluation that family medicine promotes is particularly useful in identifying diseases that may present insidiously or variably in different people. In this instance, having the ability to observe a

number of siblings within the same clinical umbrella provided us with a composite view that allowed for earlier diagnosis and intervention. In addition, in resource-limited settings in which laboratory testing (i.e., throat culture or rapid antigen detection) is not available or is delayed, the importance of careful physical examination and clinical judgment becomes even more essential. Knowledge of classic findings like Pastia's lines, convalescent desquamation, or the sandpaper rash can significantly enhance clinical judgment.

From a public health perspective, the cases also point to the value of heightened surveillance and education in communicable childhood diseases. Though scarlet fever's incidence has fallen spectacularly since pre-antibiotic days, recent years have seen episodic recrudescence in a number of regions, implicating either shifting bacterial virulence or lapses in herd immunity (5). Primary care systems must therefore remain vigilant and responsive. Prompt notification to the public health authorities and proper education of the family can restrict the spread and reduce complications.

Finally, this series of cases shows the value of integrative and multidisciplinary thinking in the setting of primary care. Integrating environmental, family, and clinical variables at the same time and having a high level of suspicion allowed for intervention early on. Not only is such a treatment better for individuals, but it also serves to safeguard the larger community. In summary, scarlet fever remains a diagnostic and public health challenge. General practitioners are well placed to identify outbreaks, initiate early treatment, and institute preventive measures. In the event of potential re-emergence of the disease, rededication to conventional clinical competence, situational awareness, and early intervention is essential to the successful control of the disease.

CONCLUSION

Scarlet fever carries a good prognosis if diagnosed and treated early and adequately; otherwise, it may lead to severe complications if not treated. As is evident from the case, primary care clinicians play a central role in diagnosing and treating these everyday childhood infective illnesses early.

Family medicine is practiced using a holistic approach that extends beyond personal symptoms, including family, environmental, and societal factors. In this instance, the concurrent examination of two siblings and consideration of the family background permitted the prompt diagnosis and instituting of therapy in a timely fashion.

In addition, careful and methodical physical examination was found to have characteristic rash findings not previously noted in other practice settings. This confirms the importance of physical examination and clinical skills in family medicine.

Finally, this case series illustrates the essential role of the family doctor in the prevention, diagnosis, and management of infectious illness via a holistic and patient-centered approach. A practice of diligent physical examination and contextual assessment improves diagnostic precision in pediatric exanthems and also minimizes unnecessary referral and complication risk.

Ethics Committee Approval: This case report was conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from the patient for the publication of this case report and any accompanying images. Ethical approval was not required for this single-patient case report in accordance with institutional policies.

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