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SHORT COMMUNICATION

Cellulitis-like Skin Eruption of Purulent Tenosynovitis Caused by *Streptococcus dysgalactiae*

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Purulent tenosynovitis is an infection within the tendon sheath (1). *Staphylococcus aureus* and *Streptococcus* are the most common causative organisms (1). The risk factors are an immunocompromised status such as HIV infection and diabetes mellitus (1). We describe purulent tenosynovitis caused by *Streptococcus dysgalactiae* subsp. *equisimilis* mimicking cellulitis. Diagnosis requires magnetic resonance imaging (MRI) and the culture of exudate fluid from the carpal tunnel.

CASE REPORT

A 48-year-old Japanese man suddenly developed fever (39.0°C) and painful skin eruption of the right wrist region on October 29, 2011. He had a history of diabetes mellitus for 12 years, controlled with insulin. Because tenderness persisted and flexion of the fingers gradually became difficult, he was admitted to our hospital on October 31, 2011. He had suffered no trauma to the skin. A physical examination revealed erythema of the wrist region and palm of his right hand. The right hand, extending from the wrist to the fingers, was erythematous, warm, and swollen, with marked induration and punctate bleeding (Fig. 1a). A tentative diagnosis of cellulitis was made. On October 31, 2011, he had a white blood cell count of 12,550/mm^3 (normal range 4,700–8,700/m^3) and a haemoglobin level of 9.9 mg/dl (normal 13.0–17.0 mg/dl). Immediately after hospitalisation, his blood results were: glucose: 163 mg/dl (normal 70–100 mg/dl); HbA1c: 7.9% (normal 4.6–6.2%); blood urea nitrogen: 30.9 mg/dl (normal 7.0–20.0 mg/dl); creatinine: 1.77 mg/dl (normal 0.70–1.30 mg/dl); aspartate transaminase (AST; SGOT): 18 U/l (normal 10–35 U/l); alanine transaminase (ALT; SGPT): 10 U/l (normal 5–40 U/l); alkaline phosphatase: 242 U/l (normal 100–340 U/l); and total bilirubin: 0.5 mg/dl (normal 0.1–1.2 mg/dl); total protein: 7.8 mg/dl (normal 6.5–8.2 mg/dl); antistreptolysin O: 506 (normal ≤210 U/ml); antistreptolysin K: 5,120 (normal ≤1,280 U/ml). Other relevant negative tests included blood smears for malaria, cold agglutinin, antinuclear antibody (ANA), and hepatitis-associated antigens and antibody.

Histological examination showed mild subepidermal oedema and red blood cell extravasation into the dermis (Fig. 1b, c). Emergent MRI revealed exudate fluid retention around the tendon sheaths in the carpal tunnel (Fig. 2a). The diagnosis was changed to purulent tenosynovitis. Surgery for carpal tunnel release was immediately conducted. Cultures of exudate fluid from the carpal tunnel yielded the growth of *S. dysgalactiae* subsp. *equisimilis*. A histological specimen from the tenosynovitis lesion revealed many neutrophils infiltrating between the interstitial collagen in the synovium (Fig. 2b, c). Intravenous drip infusion of clindamycin and penicillin G was started. The lesion healed promptly, without any inflammation or drainage. He also received extensive rehabilitation and recovered the function of his forearm, wrist, and hand. He was discharged on January 10, 2012.

DISCUSSION

Due to clinical signs such as erythema, heat, swelling, and tenderness, we first diagnosed this patient with cellulitis (2). However, sites of predilection for

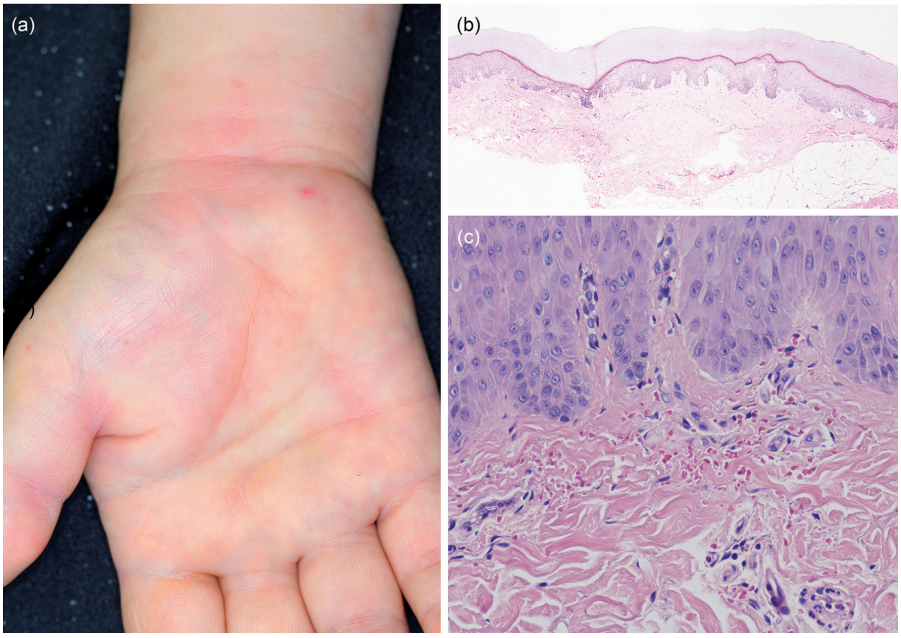

Fig. 1. The right hand, extending from the wrist to the fingers, was erythematous, warm, and swollen, with marked induration and punctate bleeding (a). Haematoxylin-eosin stain demonstrated mild subepidermal oedema and red blood cell extravasation INTO the dermis. (b) × 2; (c) × 100.

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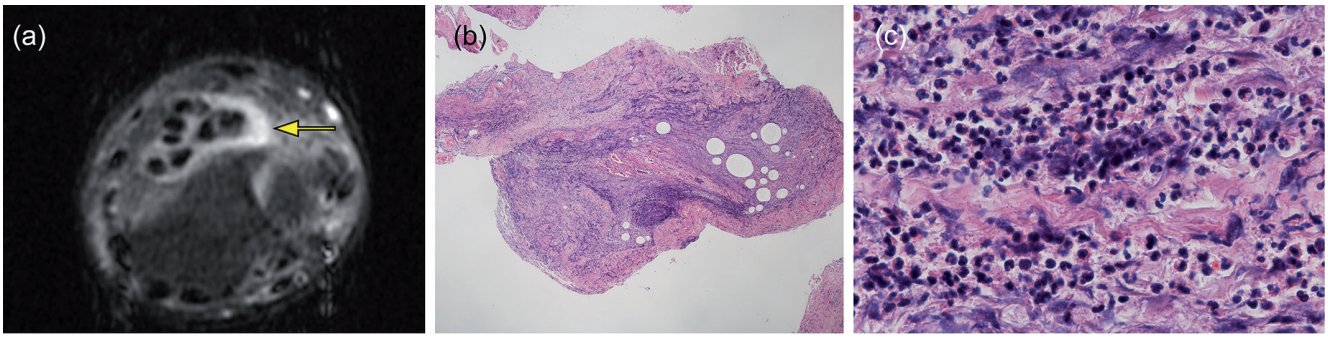

Fig. 2. Emergent magnetic resonance imaging revealed exudate fluid retention around the tendon sheaths in the carpal tunnel (arrow) (a). A histological specimen from the tenosynovitis lesion revealed many neutrophils infiltrating between interstitial collagen in the synovium. (b) × 4; (c) × 100.

cellulitis are the lower legs and face (3). In addition, the erythema was fainter than typical cellulitis and the patient complained of difficulty in flexion of the fingers of his right hand. Thus, we conducted emergent MRI and found exudate fluid retention around the tendon sheaths in the carpal tunnel. We believe the emergent MRI was of marked importance in curing this patient.

Purulent tenosynovitis caused by *S. dysgalactiae* subsp. *equisimilis* has not been reported. This pyogenic β-haemolytic *Streptococcus* is emerging as a human pathogen with a similar disease profile to *S. pyogenes* (4–6). While it primarily presents as skin and soft-tissue infections, including cellulitis and necrotising fasciitis, *S. dysgalactiae* subsp. *equisimilis* sometimes causes endocarditis, rheumatic fever, and streptococcal toxic shock-like syndrome. Hence, there is a need to accurately identify this invasive subspecies of *Streptococcus*. We used a classical culture method, a swab from the exudate fluid and streaking on blood agar plates, to identify *S. dysgalactiae* subsp. *equisimilis*. There is a report on identifying this subspecies with the aid of matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF) (7, 8). As our patient was immunocompromised due to severe diabetes mellitus, this subspecies might have grown instead of *S. pyogenes*, which is most frequently identified in cellulitis. An appropriate diagnostic imaging system and rapid bacterial cultures are mandatory for a correct diagnosis because skin eruption is sometimes the first sign of soft tissue infection which may later become severe.

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The authors declare no conflict of interest.

REFERENCES

1. Dailiana ZH, Rigopoulos N, Varitimidis S, Hantes M, Bargiotas K, Malizos KN. Purulent flexor tenosynovitis: factors influencing the functional outcome. J Hand Surg Eur Vol 2008; 33: 280–285.
2. Weedon D. Cellulitis. In: Skin Pathology. 2nd edition. Edinburgh, Scotland: Churchill Livingstone; 2002: p. 620–622.
3. MacKee PH, Calonje E, Granter S, editors. Cellulitis. In: Pathology of the Skin: With Clinical Correlations. 3rd edition. Philadelphia, PA: Elsevier Mosby, 2005: p. 874–876.
4. Broyles LN, Van Beneden C, Beall B, Facklam R, Shewmaker PL, Malpiedi P, et al. Population-based study of invasive disease due to beta-hemolytic streptococci groups other than A and B. Clin Infect Dis 2009; 48: 706–712.
5. Ahmad Y, Gertz RE Jr, Li Z, Sakota V, Broyles LN, Van Beneden C, et al. Genetic relationships deduced from emm and multilocus sequence typing of invasive Streptococcus dysgalactiae subsp. equisimilis and S. canis recovered from isolates collected in the United States. J Clin Microbiol 2009; 47: 2046–2054.
6. Efstratiou A. Pyogenic streptococci of Lancefield groups C and G as pathogens in man. Soc Appl Bacteriol Symp Ser 1997; 26: 72S–79S.
7. Hashikawa S, Iinuma Y, Furushita M, Ohkura T, Nada T, Torii K, et al. Characterization of group C and G streptococcal strains that cause streptococcal toxic shock syndrome. J Clin Microbiol 2004; 42: 186–192.
8. Anantha RV, Kasper KJ, Patterson KG, Zeppa JJ, Delport J, McCormick JK. Fournier's gangrene of the penis caused by Streptococcus dysgalactiae subsp. equisimilis: case report and incidence study in a tertiary-care hospital. BMC Infectious Diseases 2013; 13: 381.