
Invasive Streptococcus pyogenes infection in a surgeon after an occupational exposure

Surgeons and other healthcare workers are at risk of developing an occupational infection caused by viral blood-borne pathogens such as hepatitis B (HBV) and C (HCV) viruses, and human immunodeficiency virus (HIV), and universal precautions for preventing these troublesome professional diseases have been properly provided [1]. Much less attention is paid to bacterial pathogens such as Streptococcus pyogenes, which can cause severe infections as well. We report the first—to our knowledge—documented invasive streptococcal infection occurring in a surgeon following accidental injury by a medical instrument.

A 50-year-old woman with a voluminous uterine leiomyoma was admitted to our hospital for a suspected acute abdomen neurogenic pathologic, she underwent hysterectomy and bilateral adnexectomy. The peritoneal cavity appeared to be filled with purulent material. During surgery, a 47-year-old obstetric-gynecologic surgeon accidentally pricked the inner side of his right middle finger with a pointed lancet. Unfortunately, a plan of action for the control of bacterial infection following occupational exposure did not exist in our hospital at that time, so the surgeon was included in a protocol for prevention of HBV, HCV and HIV transmission alone. Starting the following day, he noted the sequence of: (1) a small bullous lesion on his injured finger; (2) a few hours later, an erythematous edge all around the lesion, followed by serousanguinous discharge and evidence of a necrotic base; (3) within 36 h, fever of up to 39°C with shivers, and a red line of an ascending lymphangiitis on his right arm, for which reason he began self-treatment with oral amoxicillin; (4) within 48 h, a right axillary lymphadenopathy. At this time, our colleague was admitted to the infectious disease unit with the diagnosis of bullous cellulitis. Physical and laboratory evaluation revealed: temperature, 38.8°C; blood pressure, 150/85 mmHg; erythrocyte sedimentation rate, 56 mm/h; leucocyte count, 5040/mm³. As the culture of peritoneal liquid intraoperatively obtained from the index patient grew a S. pyogenes strain susceptible to all the antibiotics tested (ampicillin, erythromycin, imipenem, penicillin G, piperacillin, tazobactam, and vancomycin), we initiated intravenous therapy with penicillin G 4 MU every 4 h plus clindamycin 900 mg every 8 h. Such an aggressive therapeutic approach, recommended for severe streptococcal skin infections [2], was chosen because of the rapid progression of the disease. Defervesence was achieved within the second day, and the other physical signs progressively improved by the sixth day, when the surgeon was discharged with oral clindamycin 900 mg

REFERENCES

every 8 h plus intramuscular ceftriaxone 1 g/day for 5 more days. Blood cultures obtained on admission were negative, but a culture from the finger lesion yielded a S. pyogenes strain which showed the same antimicrobial susceptibility pattern as the woman’s isolate. Antistreptolysin O and streptozyme titer were 255 Todd units and 1:200, respectively, on admission, and, 4 weeks later, 310 and 1:400. The woman’s and surgeon’s isolates were sent to the National Health Institute for typing. Both strains were found to be T- and M-non-typable, producers of serum opacity factor and protetase, and negative for the genes encoding erythrogenic toxin (speA and speC). The macrorestriction profile, studied by pulsed-field gel electrophoresis (PFGE) after digestion of the DNA by Smal according to Stanley et al [3], was identical in both strains (data not shown). DNA macrorestriction endonuclease analysis using PFGE to confirm the spread of S. pyogenes among close contacts of infected patients has already been used by other researchers [4].

S. pyogenes is primarily a common agent of pharyngitis, but an increasing frequency of severe invasive infections due to this pathogen, such as toxic shock syndrome (TSS), necrotizing fasciitis, and other skin and soft tissue infections, has been observed [5]. Healthcare workers are aware of the occupational risk of developing HBV, HCV or HIV infection, but bacterial pathogens such as S. pyogenes are a well-known serious hazard in medical practice as well. In 1847, Kolletschka, a professor of medical jurisprudence in Vienna, died of presumptive streptococcal septicaemia after pricking a finger during a necropsy on a victim of purpural fever. In the first decades of the century, similar accidents have been described in surgeons, nurses and pathologists after finger pricks or scratches during attendance on a septic patient [6]. Much more recently, a TSS has been observed in a fire-fighter exposed during prehospital resuscitation to the secretions of an S. pyogenes-infected child [7], and invasive infections (bullous cellulitis, ascending lymphangitis, necrotizing fasciitis) have been developed by physicians who came in contact with body fluids or secretions of patients with streptococcal TSS [8], or who scratched a finger with the needle used in a patient with group A streptococcal sepsis [9].

To our knowledge, we have documented the first invasive streptococcal infection in a surgeon following professional injury by a medical instrument. The case we describe demonstrates that: (1) surgeons and other healthcare workers must adhere to the well-known isolation precautions for avoiding transmission of viral and bacterial pathogens when caring for all patients [10]; and (2) the availability of a plan of action to use in the case of occupational exposure would be important for prompt diagnosis and early aggressive therapy in order to minimize the clinical consequences of an invasive streptococcal infection.

*Infectious Disease Clinic, Florence University, Ospedale Careggi, Piazza dei Servizi, Viale G.B. Morgagni 85, I-50134 Firenze, Italy
Tel: +39 055 4279480
Fax: +39 055 4279480
E-mail: infilis@unifi.it

REFERENCES

Comparison of the Bectec 460TB system and the Bectec MGIT 960 system in recovery of mycobacteria from clinical specimens

The recent increase in tuberculosis and other mycobacterioses all over the world [1] has led to a search for faster and more accurate detection and identification procedures. Despite the great advances in direct detection with molecular biology methods [2], culture is still fundamental for mycobacterial detection, species identification/confirmation and drug susceptibility testing. Solid media such as Löwenstein-Jensen or Middlebrook agar have been used for such purposes, but may take several weeks to become positive. Recently introduced media such as the Middlebrook 7H12 (12B medium) and the modified Middlebrook 7H9 used in MGIT (MGIT medium)