A Case of Acute Tuberculous Ulcer Diagnosed Rapidly by the Polymerase Chain Reaction

Sir,

Skin tuberculoses are rare diseases in Japan. Particularly the lesions accompanied by ulcers are very unusual conditions. This report describes a man with multiple skin ulcers owing to tuberculous infection. The polymerase chain reaction (PCR) was useful in quickly diagnosing the disease.

CASE REPORT

A 52-year-old male with multiple skin ulcers came to our clinic. Two months before admission, he had noticed a small ulcer on the left side of his anus. The ulcer had gradually enlarged. Antibiotic therapy by a family doctor was unsuccessful, and the patient continued to develop more ulcerous lesions. He had no medical history of tuberculosis.

Physical examination revealed several ulcers on his abdomen, perineum and left gluteal region, which had sharp edges and red bases. They were very painful and discharged pus. The largest one measured 8 × 4 cm. Two ulcers on his abdomen were linear, in which some parts were covered by crusts. Their appearance indicated to us that they had been induced by his scratching. His left gluteal region and thigh showed slight erythema. Subcutaneous induration, lymphadenopathy and fistula were not observed.

Histopathological examination of one of the ulcers revealed marked inflammatory cell infiltration and granulomatous formation, including many giant cells of the Langhans type in the upper and mid dermis. Most of the inflammatory cells were plasma cells. Though central necroses did not exist there, we supposed mycobacterial infection.

Repeated Ziehl-Neelsen stains of his saliva, urine and discharge from his skin ulcer were negative. The tuberculin skin test showed no erythema or induration. A chest X-ray revealed normal shadows. A fiberscopic examination did not detect any unusual lesions in his large intestine. A sonographic examination and a computed tomographic scanning revealed the dilated calyx of his left kidney. A cystoscopy showed granulation, discharge and multiple ulcers around the left ureteral orifice. These results indicated that he had tuberculosis of the urinary tract.

To confirm the diagnosis of tuberculosis early, we examined the pus from his skin ulcer by PCR, which amplified the bovine tuberculous MPB 70 gene. Out of 27 *Mycobacterium* species, only the *Mycobacterium tuberculosis* complex, i.e. *M. tuberculosis, M. bovis, M. africanum and M. microti,* show DNA amplification by PCR for MPB 70. This examination was performed in Shionogi biomedical laboratories (Osaka, Japan). Kusunoki et al. (1) developed the method. For the amplification of mycobacterial DNA, primers TB-1A, TB-1B (2) were used. PCR was carried out 34 cycles at 94°C for 1 min, 62°C for 1 min, and 72°C for 1 min. Next, 10 μl of the reaction mixture was electrophoresed on a 2× agarose gel. A 372-base-pair fragment, which corresponded to MPB 70, was detected by ethidium bromide stain.

PCR proved the existence of mycobacterial DNA in the pus, from which acute tuberculous ulcer was diagnosed. The patient was given isoniazid 400 mg and rifampicin 450 mg per day. The ulcers on his skin and urinary bladder healed in 4 weeks. Culture from the pus grew *Mycobacterium tuberculosis* during this time. A niacin test was positive. He required 2 years of antituberculous therapy for his tuberculosis of the urinary tract, although treatment of skin tuberculoses generally requires only 6 to 9 months.

DISCUSSION

Acute tuberculous ulcer (orificial tuberculosis, tuberculosis cutis orificialis) is a rare disease, which is defined as tuberculous infection of the mucosa or the skin adjoining orifices in a patient with advanced internal tuberculosis (3). It ulcerates from the beginning and spreads very fast. Most patients with this disease have severe pain and show a negative reaction to tuberculin tests, as in our case. The lesions arise not only by autoinoculation but also by lymphatic or haematogenous dissemination (3). Some ulcerous cases without mucous or orificial lesions are also reported as "tuberculous ulcer" (4, 5).

Skin ulcers may also accompany some skin tuberculoses: primary tuberculosis lesion, scrofuloderma, lupus vulgaris and tuberculous gumma. The present case should be classified as acute tuberculous ulcers, since the patient had a lesion of the urinary tract and an ulcer on his anal region initially, had no subcutaneous nodule or skin swelling, and showed a negative tuberculin reaction. He apparently inoculated his abdomen and gluteal region by his scratching.

PCR was very helpful to diagnose the present case early. It takes only a few days to obtain the results of PCR; however, culturing mycobacterial species requires 4 to 8 weeks. PCR is also useful for the diagnosis of other infectious diseases, genetic diseases and cancers. Though the pus from his skin ulcer was used in our case, some authors have examined formalin-fixed paraffin-embedded sections for skin tuberculoses by PCR (6–8).

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