CASE REPORT

A young 20-year-old woman with an atypical tuberculin reaction

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SUMMARY

A 20-year-old female patient presented with fever and swelling in the neck accompanied by anorexia and weight loss. The clinical examination revealed a febrile patient with diffuse cervical lymphadenopathy. Routine investigations were negative. A 5TU (tuberculin units) tuberculin skin test (Mantoux test) was positive with an induration of 52×40 mm after 72 h with central blistering, exudation and ulceration. Aspiration cytology from the cervical lymph node revealed the presence of caseating granulomas. The patient responded completely to antitubercular therapy. Enhanced-tuberculin reactions may occur on occasion in tuberculosis.

BACKGROUND

A tuberculin skin test (Mantoux reaction) is used for routine screening of individuals with a high risk of a tuberculosis (TB) infection and also for diagnosis of tubercular aetiology in various illnesses.¹ Even as the currently available tuberculin skin test antigens suffer from a less than 100% sensitive and specific for detection of infection with *Mycobacterium tuberculosis*, no better diagnostic methods are widely available (1). In fact this is one of the only tests in current clinical use after a century of its introduction,² and surprisingly the interpretation remains somewhat controversial.³ A standardised 5TU (tuberculin units) of purified protein derivative (PPD) is injected intradermally into the volar aspect of the forearm (typically left) and delayed hypersensitivity reaction noted by measuring the induration after 48–72 h. An induration of 10 mm is regarded as a positive test response in immunocompetent individuals, whereas a response of 5 mm may be considered positive in immunodeficient individuals like those with HIV infection or those on immunosuppressive drug therapy. While erythema and induration are the normal response, atypical reactions, such as blisters, granulomas and local necrosis, after a PPD test are very rare.^{4–5} We herewith report a young woman with an exaggerated response to a standard 5TU tuberculin test.

CASE PRESENTATION

A 20-year-old woman presented with fever and swelling in the neck of a 10-week duration. The fever would usually come in the evenings and was accompanied by night sweats. There was accompanying loss of appetite and weight loss, the patient registered a weight loss of about 5 kg during the period. The swellings in the neck were bilateral and were non-tender. The patient denied a

history of haemoptysis, chest pain, breathlessness, abdominal pain, tenderness of the neck swelling, palpitations or any gastrointestinal or urogenital symptoms or other symptoms referable to other organ systems. The patient's uncle had been treated for pulmonary TB about 5 years earlier. A clinical examination revealed a 49 kg, thin built young febrile patient with diffuse cervical lymphadenopathy. The lymph nodes were discreet ranging upto 2 cm in size and were non-tender, mobile and some were matted together. However, they were not fixed to the underlying structures and the overlying skin was free. Rest of the general physical and systemic examination was normal.

INVESTIGATIONS

Investigations revealed a normal haemogram with an erythrocyte sedimentation rate 50 mm in the first hour. A radiograph of the chest and an ultrasound scan of the abdomen and pelvis were normal. A routine serum biochemistry and urine analysis were normal. A 5 TU tuberculin skin test (Mantoux test) was performed. After 72 h, the skin reaction was positive with induration having dimensions of 52×40 mm and an enhancement towards the centre in the form of blistering, exudation and ulceration (figure 1). The exudate was negative for organisms on Grams' staining and a Ziehl Neelson stain of the smear was negative for acid-fast bacilli. Aspiration cytology from the cervical lymph node revealed the presence of granulomas with central caseation consistent with a diagnosis of TB.

TREATMENT

The patient was put on antitubercular therapy (rifampicin 450 mg, isoniazid 300 mg, ethambutol

Figure 1 Enhanced reaction to tuberculin skin test.

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800 mg and eyrazinamide 1.5 g daily for 2 months followed by rifampicin/isoniazid daily for 4 months).

OUTCOME AND FOLLOW-UP

The patient's fever responded after 3 weeks and the neck swellings gradually disappeared over a period of 4 months. The patient registered a weight gain, improvement in appetite and recovered completely.

DISCUSSION

Our patient had an unusually exaggerated response to a standard tuberculin test. Exaggerated responses to tuberculin testing are rare. Of the more than 5000 tuberculin skin tests over a past 5-year period, Trowbridge *et al*⁶ reported only one case of blister formation at the PPD site and one exaggerated hypersensitive reaction. However, local necrosis has been reported in up to 2.5% of patients with positive responses.⁷ A punch biopsy of the lesion demonstrated marked spongiotic dermatitis with intraepidermal and subepidermal vesiculation and scattered eosinophils, consistent with tuberculin-type hypersensitivity.⁶ Active TB, high-mycobacterial antigen load or lepromatous leprosy have been reported to be associated with an exaggerated Mantoux response.⁸ Patients who have an induration of more than 20 mm have a higher chance of developing active TB than those with 10 mm induration.^{9 10} However, in another study of

529 close contacts or patients suspected of active TB, reactions less than 5 mm indicated lower likelihood of active or inactive disease, but above that threshold, size of tuberculin reaction did not matter.¹¹

Physicians need to be wary of an exaggerated response to Mantoux testing which seems to be associated with a greater chance of active tubercular disease or a higher chance of developing TB.

Contributors UHK and PAK equally contributed to the write up of the manuscript.

Competing interests None.

Patient consent Obtained.

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Learning points

- ▶ Tuberculin skin testing continues to be widely used clinically despite >100 years of its first introduction.
- ▶ Exaggerated tuberculin reactions are rare.
- ▶ Exaggerated tuberculin response is associated with a higher likelihood of developing active tuberculosis.

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