CASE REPORT

Rapid recovery from acute transverse myelitis in an elite female swimmer

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Rubella is now an uncommon disease, and its neurological complications are rarely encountered. One complication, acute transverse myelitis, has been described in a few case reports and usually has an unfavourable outcome. The case is presented of an elite swimmer who developed transverse myelitis after rubella, which was treated with methylprednisolone. The recovery was so rapid and complete that two months after the acute event she broke a national swimming record.

Nowadays, rubella is quite a rare disease. One of its complications is acute transverse myelitis, which has been described in only a few case reports.¹⁻⁴ In general, acute transverse myelitis has an unfavourable outcome.⁵ We present a case of a swimmer who developed transverse myelitis after rubella, whose recovery was so rapid and complete that she broke a national swimming record in the remarkably short period of two months after her illness.

CASE REPORT

The swimmer gave her fully informed consent for publication of this case report.

History

A 19 year old elite female swimmer presented to the sports medicine clinic complaining of weakness of both lower limbs and sudden urinary retention during a febrile illness with a rash.

She had been ill for several days before this onset, with generalised weakness, loss of appetite, fever, a slightly itchy rash which started from her face and spread down to cover all of her body, and muscle and joint aches. She was seen then by a doctor who diagnosed rubella. On the sixth day of illness, an increasing weakness developed in her lower limbs, and she could not urinate, with no lower urinary tract symptoms. She was referred to a general hospital.

Her medical history was significant for an episode of measles occurring seven months previously, its course passing uneventfully. The patient did not receive the MMR (mumps, measles, rubella) immunisation in her childhood, as this was not customary in her country of birth.

Physical examination

On admission to hospital, the patient looked ill, but no rash was evident. Vital signs were normal other than a fever of 38.0°. On examination of the head and neck, there was no nuchal rigidity, several cervical lymph nodes were enlarged and tender, and pupils were equal, round, and reactive. Heart, lungs, abdomen, and joint examinations were normal. On neurological examination, the patient was alert and oriented, with no cranial nerve deficits. Upper limbs had normal tone, sensation, and gross motor power. Abdominal reflexes were absent, with hyperaesthesia below the level of T8-T9. The lower limbs had bilateral proximal and distal

weakness to 4/5, hyperaesthesia, decreased patellar tendon reflexes, and bilateral upward Babinski signs. Cerebellar function was normal. Insertion of a urinary catheter revealed a residual urine volume of 1000 ml.

Laboratory tests

Complete blood count and chemistry values, including liver enzymes, were within normal range. Table 1 presents serological test results. As the admitting ward was probably not alert to the exact nature of the preceding illness, and as the rash had faded, rubella IgM antibodies were not measured. Owing to the lack of meningeal signs and her rapid recovery in the following days, a lumbar puncture was not performed. A computed tomography scan of the spine and a brain and spine magnetic resonance image were normal.

Treatment and outcome

The patient was treated with intravenous methylprednisolone (500 mg twice a day), with a working diagnosis of transverse myelitis. Within four days of admission, she had regained most of her motor, sensory, and urinary functions. She was discharged five days after admission with a minor residual weakness in her lower limbs. On a follow up visit one week after her discharge, her neurological examination was completely normal.

She returned to swimming the day after her discharge. One month after the acute event, she regained her prior swimming results in an international competition. Two months after the onset of transverse myelitis, she broke the Israeli national 100 m freestyle swimming record. The swimmer continued to compete at an international level for

Table 1 Serological test results

	Before ATM	During ATM	After ATM
Rubella IgG (IU/ml)*	<10		>100
Mumps IgM		—ve	
EBNA		+ve	
CMV IgG		—ve	
CMV IgM		—ve	
Q fever IgM		—ve	
Q fever IgG		—ve	
ANA		—ve	
Antibodies to DNA		—ve	
C3 complement factor		Normal	
C4 complement factor		Normal	
Total IgG		Normal	
Total IgA		Normal	
Total IgM		Normal	
Rheumatoid factor		—ve	
Anticardiolipin		—ve	

*Rubella IgG titre below 15 IU/ml = not immune, above 30 IU/ml = immune. These tests were ordered by the treating sports medicine clinic before and after the acute illness had passed.
ATM, Acute transverse myelitis; EBNA, Epstein-Barr virus nuclear antigen; CMV, cytomegalovirus; ANA, antinuclear antibodies.

What is already known on this topic

- Rubella, once a widespread illness, is much less common now with current immunisation programmes, although immunisation rates are less than complete
- A very rare complication is acute transverse myelitis, which generally has a poor prognosis

What this study adds

- Weakness during a febrile illness or shortly after it has a differential diagnosis, which includes some severe neurological disease states
- Acute transverse myelitis can be successfully treated, with maximal motor function regained

several years after this severe neurological event, without any additional neurological or autoimmune events.

DISCUSSION

We have presented a case of an elite swimmer, who, after a rubella infection with severe neurological deficits, returned to swimming and within two months broke a national record. The clinical appearance of her illness, highlighted by the typical rash and postauricular lymph nodes, together with anti-rubella IgG seroconversion, was diagnostic for rubella. Acute transverse myelitis after rubella has been previously described in 10 cases from 1923 to 1999,¹⁻⁴ but such a rapid recovery in an elite athlete is remarkable.

The temporal relation to the febrile illness, the development of neurological signs over a period of a few days after the rash had resolved, the monophasic course, the clear sensory level on the trunk, and the bilateral positive Babinski signs combined to suggest post-infectious acute transverse myelitis.⁶ Other possible conditions, such as space occupying lesions, multiple sclerosis, autoimmune diseases, Guillain-Barre syndrome, and other infections were ruled out on the basis of clinical presentation and serological and radiographic studies.

The prognosis of acute transverse myelitis is poor. In one study, only 16% of patients had complete resolution of symptoms.⁵ Among those treated with methylprednisolone, outcome was better. In another study, children with transverse myelitis treated with methylprednisolone had a better outcome than historical untreated controls.⁷ Still, median time to independent walking was 23 days. These studies, however, did not measure the full extent of motor recovery as expressed by peak motor power. The fact that our subject regained her swimming results within one month, breaking the national swimming record within two months after acute transverse myelitis, shows the potential extensiveness of motor recovery after transverse myelitis.

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COMMENTARY

This case report illustrates the importance of sound clinical skills in the sports medicine clinician. This particular presentation of rubella had an unusual outcome. This case also demonstrates the importance of primary immunisation, and reminds the sports medicine clinician to be aware of preventive medicine. Although a rare presentation, this report illustrates an important example of a common viral illness that can affect athletes in the prime of their athletic career.

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COMMENTARY

Adequate immunisation practices have severely curtailed the incidence of rubella. However, objection to immunisation still occurs in some communities. This avoidance has resulted in a recent epidemic in Southern Ontario, with over 100 students contracting rubella, and highlights the need to maintain a high index of suspicion whenever we assess an unusual rash. When such a rash is accompanied by neurological symptoms, our priority is to ensure a quick investigation and diagnosis. In this case, an elite athlete was fortunate to be promptly assessed and appropriately managed. Her remarkable recovery and subsequent achievement reminds us that prudent sports medicine physicians should make careful inquiries about the immunisation status of all athletes under their care. This is a crucial role of the team doctor before a team travels. By being comprehensive, we may avoid testing fate, which in this case provided a favourable outcome.

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