Myocarditis complicating cytomegalovirus mononucleosis

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Summary

A case of cytomegalovirus mononucleosis with myocarditis as the major presenting clinical manifestation is described. The rarity of symptomatic myocarditis in this condition is discussed.

Introduction

Myocarditis is an unusual feature of cytomegalovirus mononucleosis. When it occurs it is usually a minor part of the clinical syndrome, and may be recognized by transient changes in the electrocardiogram (Klemola *et al.*, 1967; Klemola, 1973).

Case history

A 34-year-old nurse was admitted to hospital complaining of the sudden onset of shortness of breath associated with a tight feeling in the chest. For a week before admission she had felt generally unwell with headache and muscle aches, and had been largely confined to bed. She had been taking an oral contraceptive regularly for two years.

On admission she was sweating and dyspnoeic; her temperature was 37°C. There was a tachycardia, 140/min. The jugular venous pressure was not raised. There was a triple rhythm but no murmurs and no pericardial rub. The lungs were normal clinically. There was no evidence of deep vein thrombosis. The liver and spleen were not enlarged, and no abnormal lymph nodes were found. The chest X-ray was normal. The electrocardiogram showed a sinus tachycardia with an 'S1 Q3 T3' pattern. The electrical axis was normal and there were no T wave changes in the right precordial leads V1-V3 (Fig. 1).

An initial diagnosis of pulmonary embolism was made. Heparin therapy was started with 10,000 u given intravenously and then 15,000 u in 500 ml of 5% dextrose 12-hourly. During the next 24 hr her temperature rose to 38.5°C but otherwise her condition remained unchanged.

The initial white cell count was 7200/mm³ with 68% neutrophils, 19% lymphocytes, 9% monocytes, and 2% atypical mononuclear cells. The E.S.R. was 98 mm in the first hour. The chest X-ray was repeated the next day and again appeared normal.

At this time further electrocardiographic changes developed, with Q wave formation and T wave inversion in lead aVF (Fig. 2).

A revised diagnosis of probable viral myocarditis was made. Subsequent investigations are summarized in Table 1, where it can be seen that serial cytomegalovirus titres from blood were high and remained raised for a number of weeks. The titres of antibodies to the Coxsackie group of viruses and to *Toxoplasma* were not raised. Cytomegalovirus was not isolated from throat swabs, faeces or urine. The serum enzymes which were markedly elevated 24 hr after admission returned to normal values within 21 days. The electrocardiogram 3 weeks after admission showed some resolution of the earlier changes (Fig. 3).

For 11 days the patient had a remittent fever of to 39°C which subsided by the sixteenth day. However, tachycardia (100/min) persisted for a further 4 days. One month after admission the patient was discharged home feeling well.

Comment

The patient's symptoms, the changes in the electrocardiograms, the blood picture, and the very high cytomegalovirus titres confirm a diagnosis of cytomegalovirus mononucleosis complicated by myocarditis.

Cytomegalovirus infection is common if judged by antibody titres; in one series 54% of the population had positive titres by the age of 35 (Stern and Elek, 1965). Cytomegalovirus infection in adults is often asymptomatic, but an infectious mononucleosis-like syndrome is not uncommon. The patient presents with a febrile illness resembling infectious mononucleosis but with a negative heterophil antibody test. There is usually no lymphadenopathy (Klemola *et al.*, 1969; Klemola and Kaariainen, 1965). Uncommonly, liver and spleen have been reported to be enlarged (Klemola, 1973; Jordan *et al.*, 1973; Herlong and Esham, 1973). Jaundice is rare although abnormal liver function tests are common. Cytomegalovirus mononucleosis may occur following blood transfusion (Klemola *et al.*, 1969).

FIG. 1. Electrocardiogram on admission.

FIG. 2. Electrocardiogram two days after admission.

FIG. 3. Electrocardiogram three weeks after admission.

TABLE 1. Summary of the relevant investigations and results

Test	Result	
White cell count	8600/mm ³	55% lymphocytes 8% atypical mono-nuclear cells
Paul-Bunnell	Negative	
Anti-nuclear factor	Negative	
L.E. cells	Negative	
Liver function tests:-		
S.G.O.T.	88 i.u. (normal <20)	
S.G.P.T.	140 i.u. (normal <20)	
L.D.H.	618 i.u. (normal <400)	
Serum proteins	IgM 600 mg/100 ml (normal 40-260) IgG 2000 mg/100 ml (normal 700-1500) IgA 300 mg/100 ml (normal 60-190)	
Blood cultures	Negative	
Viral screen:-		
Coxsackie	}	Negative
Echovirus		
Myxoviruses		
Herpes		
Cytomegalovirus titres		
	1 : 256	13.4.74
	1 : 256	4.5.74
	1 : 256	21.5.74
<i>Mycoplasma</i>	}	Negative
<i>Coxiella</i>		
<i>Toxoplasma</i>		

The condition is usually mild and has a good prognosis.

Generalized cytomegalovirus infection has been associated with a fatal case of myocarditis in a 15-year-old boy (Tiula and Leinikki, 1972). Evidence of myocardial involvement by the virus has been found at autopsy in a further case (Vogel, 1958). Myocarditis has been inferred from the changes in the electrocardiograms of two out of fourteen cases of cytomegalovirus infection in older children and young adults (Stern *et al.*, 1970). A patient with associated hepatitis and pericarditis has been described (Rasanen and Saikku, 1967).

Myocarditis has occasionally been inferred from the presence of electrocardiographic changes in cases of cytomegalovirus mononucleosis (Klemola, 1973; Klemola *et al.*, 1967). Myocarditis as the major presenting clinical manifestation does not appear to have been previously reported.

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