

# Giant Cell Myocarditis Mimicking an Acute Myocardial Infarction

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## SUMMARY

The giant cell myocarditis (GCM) is a rare disease, of unknown origin, and probably of autoimmune etiology. It can occur as refractory heart failure, associate with ventricular arrhythmias, and mimicking an acute myocardial infarction in certain cases. Its prognosis is usually ominous, unless immunosuppressive therapy or cardiac transplant is performed, the latter with a high recurrence.

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**Key words** > Myocarditis - Myocardial Infarction - Heart Failure

**Abbreviations** > GCM Giant cell myocarditis

## CASE REPORT

A 63-year old man with no previous history of cardiovascular disease sought medical care due to effort progressive angina with episodes of rest angina 72 hours later. Physical examination on presentation was normal. The electrocardiogram showed ST-segment elevation in the anterior wall leads, and ST-segment depression in inferior wall leads and in V4 to V6. Fibrinolytic treatment was then initiated (Figure 1). During the infusion the patient presented hypotension and ventricular fibrillation that required electrical cardioversion. Later he was referred to our center for rescue angioplasty. Coronary angiography showed absence of significant lesions in the coronary arteries. In the catheterization laboratory he presented hypotension and extreme bradycardia that required the insertion of a transient pacemaker and an intraaortic balloon catheter. Immediately after, he presented cardiac arrest that was refractory to cardiopulmonary resuscitation. A histopathological study was performed. Gross appearance of both ventricles revealed reddish-brown areas (Figure 2 A and B). Microscopic examination showed the presence of giant cell myocarditis (GCM) (Figure 3 A, B and C).

## DISCUSSION

Giant cell myocarditis is an infrequent and rare inflammatory disease of the heart of uncertain etiology, characterized by extensive myocardial degeneration, with necrosis and fibrosis, associated with the presence of giant multinucleated cells and inflammatory infiltrate. (1-4) Different series have reported that the disease affects both genders equally and occurs in individuals in the fourth decade of life. (1, 2, 5) The majority of cases of giant cell myocarditis occur in

otherwise healthy persons; however, as it is frequently associated with several autoimmune systemic diseases, such as ulcerative colitis, Crohn's disease, Takayasu's arteritis, myasthenia gravis, Hashimoto's thyroiditis, vitiligo and pernicious anemia, GCM is thought to be an autoimmune-mediated myocarditis. (5-7)

Heart failure and ventricular tachycardia are frequent clinical manifestations of the disease. (2, 3, 5) The prevalence of CGM is 6% of all myocarditis diagnosed by histopathological studies. (6) Initial symptoms resemble those of acute myocardial infarction in 6% of cases. (5) Differential diagnosis with myocar-

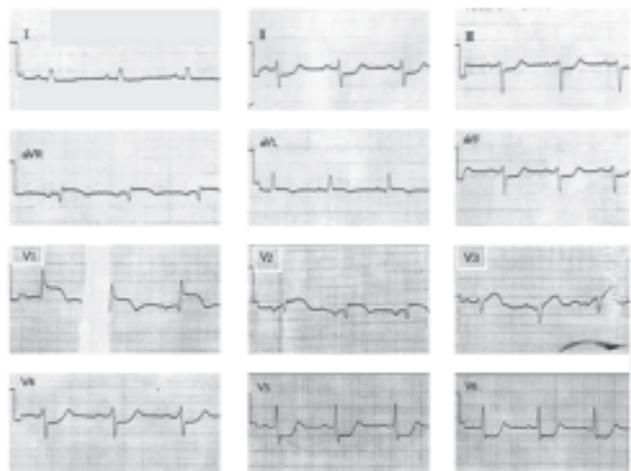


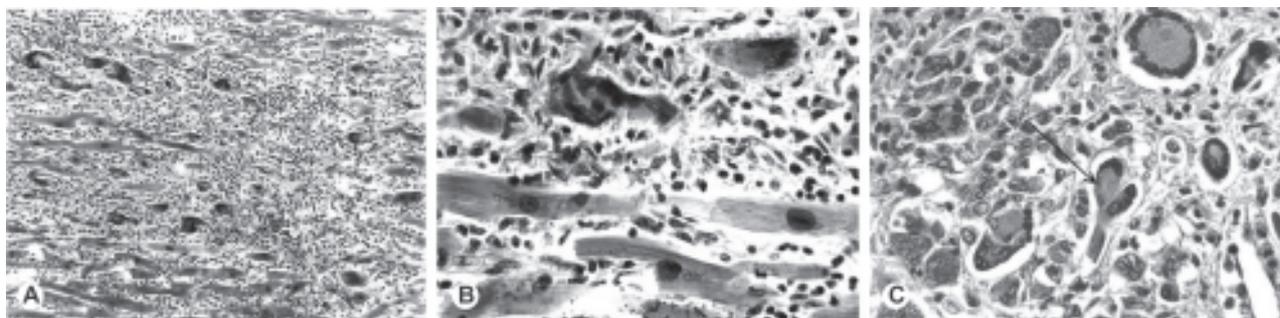
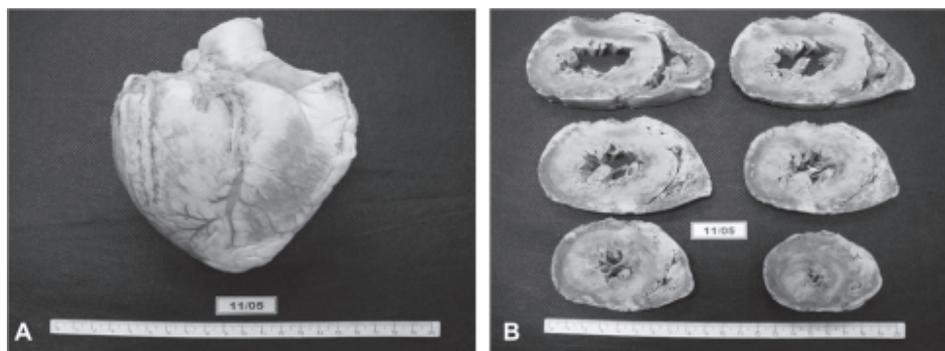
Fig. 1. 12-lead electrocardiogram.

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**Fig. 2. A.** Gross examination of the heart. **B.** Gross examination of transverse sections of the heart, showing brown-reddish areas with a geographic pattern in both ventricles.



**Fig. 3. A.** HE 10 . Histological section of the myocardium showing few myocardial fibers separated by a chronic inflammatory infiltrate with numerous giant cells. **B.** HE 40 . Microscopic image under high power magnification showing inflammatory infiltrate containing lymphocytes and multinucleated giant cells adjacent to myocytes. **C.** Histological image under high power magnification. Immunohistochemical staining with positivity for smooth muscle actin showing multinucleated histiocytes with phagocytized myocytes (arrow).

dial infarction is difficult, as patients may present typical chest pain, ECG changes, increase in serum levels of cardiac enzymes and, in occasions, it may evolve to ventricular aneurysm. (3, 5) Complete atrioventricular block may be the first clinical manifestation.

As the prognosis of patients with this condition is poor, it should be recognized as soon as possible. As we have previously mentioned, the diagnosis of the disease is histopathological, either by endomyocardial biopsy (which is not frequently performed due to the rapid progression of the disease), or by post-mortem examination, as in the case here reported.

When possible, cardiac transplantation is the main therapeutic option. However, recurrences of GCM may occur in transplanted hearts even several years after transplantation, and in these cases immunosuppressant therapy should be more aggressive. (5, 8, 9). Follow-up of patients with GCM undergoing cardiac transplantation should be stricter.

Immunosuppressant therapy is another treatment described for this disease. In absence of immunosuppressant treatment, survival of patients was only 3 months. Therapy with corticosteroids alone in patients treated only by corticosteroids did not show a significant improvement in survival time. A group of patients (10) treated with conventional doses of corticosteroids and azathioprine presented increase

in survival time. The combination of cyclosporine and another immunosuppressive agent produced the greatest improvement in survival time: 12.6 months. (5)

## RESUMEN

### Miocarditis de células gigantes que simula un infarto agudo de miocardio

La miocarditis de células gigantes (MCG) es una entidad rara, de causa desconocida, de probable etiología autoinmune. Puede presentarse como insuficiencia cardíaca refractaria, asociarse con arritmias ventriculares y en otras ocasiones simular un infarto agudo de miocardio. Su pronóstico con frecuencia es ominoso, salvo que se realicen tratamiento inmunosupresor o trasplante cardíaco, este último con elevada recurrencia.

**Palabras clave** > Miocarditis - Infarto de miocardio - Insuficiencia cardíaca

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