# Case

- F/27

- C/C:  acute chest pain (known vivax malaria) ）

- Cardiac enzyme: elevated

- Outside CAG: Normal

# DE-MRI
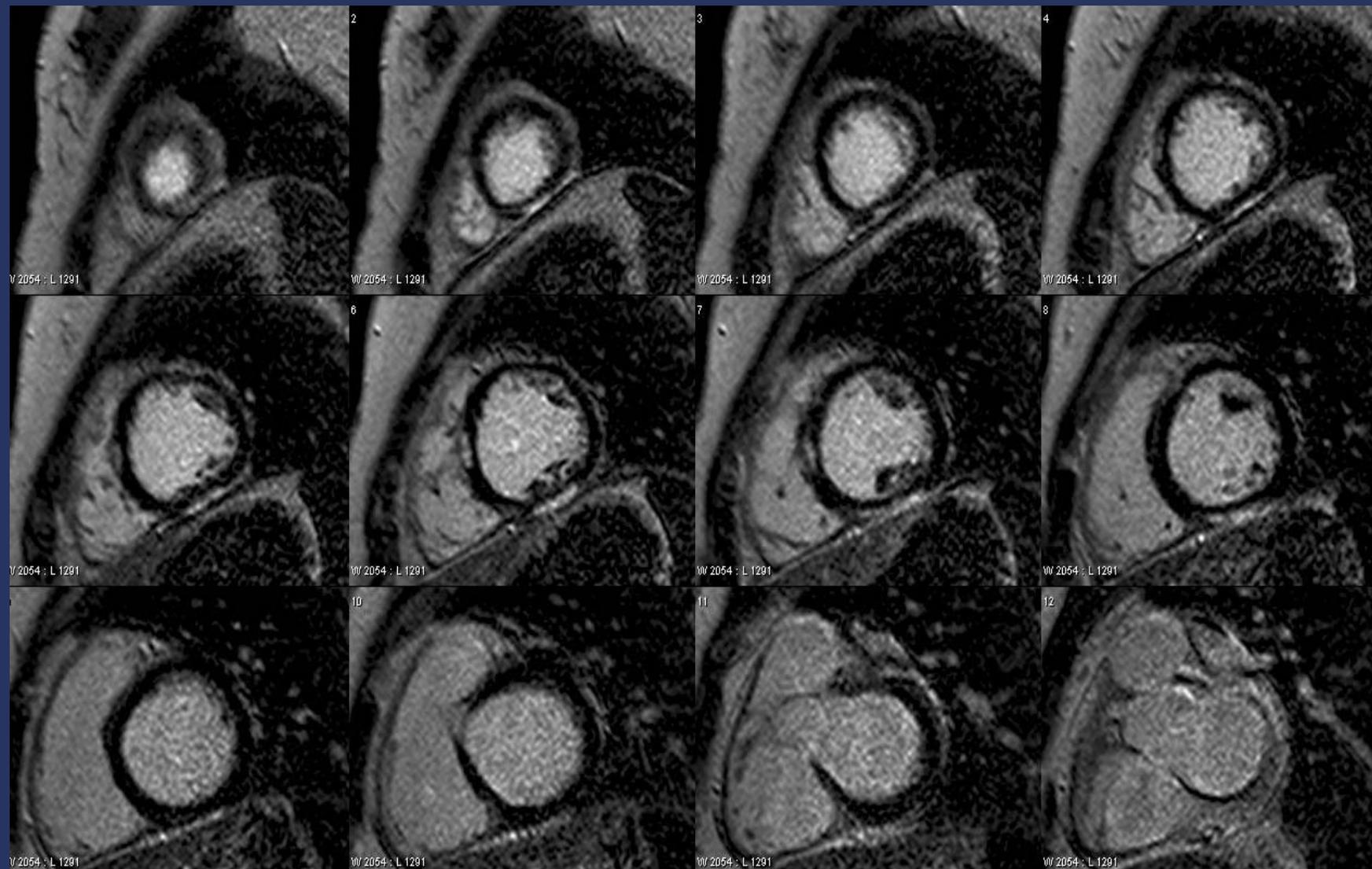
# T2-MRI
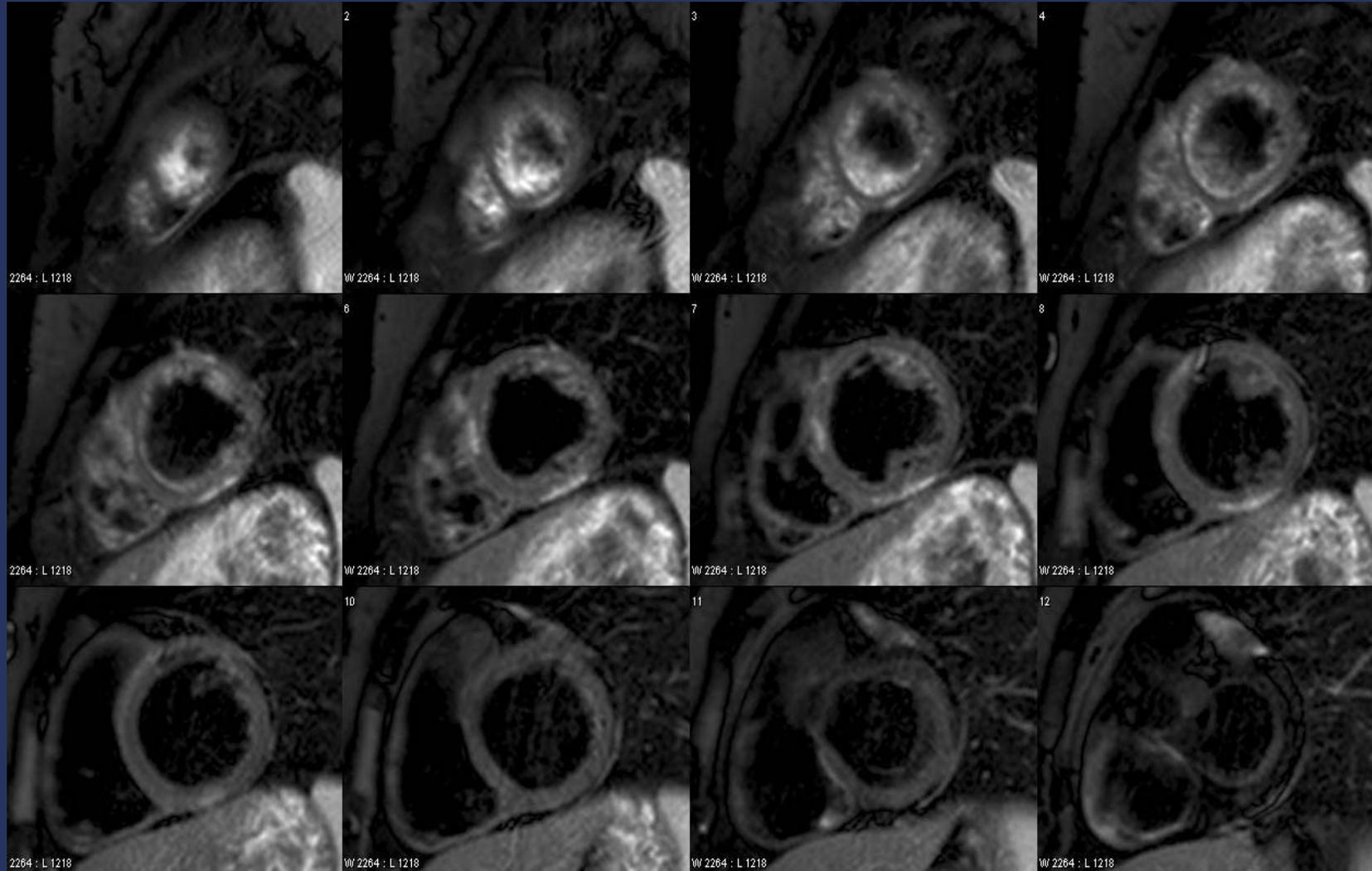
# Myocarditis

- Occasionally sudden death or chronic DCMP (5 - 10%)
- The onset of myocarditis is difficult to recognize clinically.
- Even when the diagnosis is considered, currently used diagnostic procedures suffer from limitations.

- (1) history of flu-like symptoms within 8 weeks before
    admission
  (2) one of the following symptoms:
       fatigue/malaise, chest pain, dyspnea, or tachycardia
  (3) ECG signs: AV block, ST depression, or V. Tachycardia.

*Mahrholdt H et al, Circulation.* 2004;109:1250-1258

# Myocarditis

- Contrast enhancement:
  - 28/32 patients (88%)
  - usually one or several foci in the myocardium.
    ( most frequently located in the lateral free wall)

- Initial vs F/U 3 month MRI
  - the area of contrast enhancement:
    decreased from $9\pm11\%$ to $3\pm4\%$ of left ventricular mass
  - the left ventricular ejection fraction:
    improved from $47\pm19\%$ to $60\pm10\%$.

*Mahrholdt H et al, Circulation.* 2004;109:1250-1258

# Myocarditis

- Biopsy

  - 21 patients in whom biopsy was obtained from the region of contrast enhancement:
    active myocarditis in 19 patients
    (parvovirus B19, n=12; human herpes virus type 6, n=5).

  - 11 patients in whom biopsy could not be taken from the region of contrast enhancement:
    active myocarditis in one case only (HHV6).

*Mahrholdt H et al, Circulation.* 2004;109:1250-1258

# Myocarditis

- Combined approach using T2-WI, CE-T1WI (before 4 min after contrast injection) and DE-MRI

- Global T2 SI and CE-T1WI were higher in patients than in controls.

  - T2 WI: $2.3 \pm 0.4$ vs $1.7 \pm 0.4$,
  - CE-T1WI : $6.8 \pm 4.0$ vs $3.7 \pm 2.3$

# Myocarditis
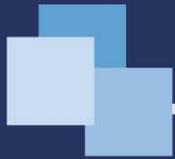
|  | Sensitivity | Specificity | Diagnostic accuracy |
| --- | --- | --- | --- |
| T2 WI | 84% | 74% | 79% |
| CE-T1WI | 80% | 68% | 74.5% |
| DE-MRI | 44% | 100% | 71% |
| "Any-two" | 76% | 95.5% | 85% |

*Abdel-Atyet al, JACC 2005;45:1815-1822*

# AMI vs Myocarditis

- Acute myocarditis may mimic acute myocardial infarction (AMI) when the patient has various combinations of

  chest pain,

  hemodynamic instability,

  ischemia-like electrocardiographic (ECG) changes, biochemical marker

  (troponin I and T and/or creatine kinase) changes,

  and segmental wall motion abnormalities at presentation.

*Laissy JP et al, Radiology 2005;237:75-82*