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# An Observational Study on Incidence of Ischemic Mitral Regurgitation Following First-time Acute Coronary Syndrome

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## ABSTRACT

**Aims and objectives:** To study the incidence of ischemic mitral regurgitation (IMR) following first episode of acute coronary syndrome (ACS) and to study the correlation between IMR and infarct location. **Methods:** Patients admitted in coronary care unit (CCU) of Rajah Muthiah Medical College and Hospital (RMMCH) during the period of January 2019 to March 2019 were screened. After satisfying the inclusion and exclusion criteria, 48 patients were enrolled in the study. The demographic details, risk factors for coronary artery disease (CAD), clinical findings, ECG findings, course in hospital, outcomes (till 10 days from admission) were recorded in a specially designated proforma. All these patients underwent ECHO imaging and the incidence of IMR was evaluated. **Results:** Out of 48 patients enrolled in our study, 25% (n = 12) of patients were found to have IMR. Among the patients with IMR following ACS, 75% had inferior wall myocardial infarction (IWMI) and 25% had anterior wall myocardial infarction (AWMI). **Conclusion:** Mild functional IMR following ACS is a very common finding on echocardiographic analysis. It was found to be more likely in elderly, diabetics and dyslipidemics. Patients with IWMI with right ventricular extension are more prone for IMR.


**Keywords:** Mitral regurgitation, ischemic mitral regurgitation, acute coronary syndrome

Mitral regurgitation (MR) is a well-known complication of myocardial infarction. It can occur either in patients with long-standing coronary artery disease (CAD) or in the setting of acute myocardial ischemia.

Ischemic mitral regurgitation (IMR) is a frequent complication of acute myocardial infarction, with a variable presentation depending on the severity of MR and the integrity of the subvalvular apparatus. While most cases are asymptomatic or have mild dyspnea, rupture of chordae tendineae or papillary muscles are catastrophic complications that may rapidly lead to cardiogenic shock and death. Echocardiography is the definite diagnostic modality, allowing quantification of the severity of MR and the structural abnormalities within the subvalvular apparatus.

In our study, we studied the profile of patients with IMR following an acute coronary syndrome (ACS) in whom the valve leaflets were structurally normal.

## AIMS AND OBJECTIVES

- To study the incidence of IMR following first episode of ACS.
- To study the correlation between IMR and infarct location.

### Inclusion Criteria

- Patients admitted in CCU for the first time with a diagnosis of ACS.

### Exclusion Criteria

- Previous history of ACS/heart failure.
- Organic mitral valve diseases (rheumatic heart disease [RHD], mitral valve prolapse syndrome [MVPS], autoimmune diseases).
- History of mitral valve surgery.

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## METHODS

Patients admitted in coronary care unit (CCU) of Rajah Muthiah Medical College and Hospital (RMMCH) during the period of January 2019 to March 2019 were screened. After satisfying the inclusion and exclusion criteria, 48 patients were enrolled in the study. The demographic details, risk factors for CAD, clinical findings, ECG findings, course in hospital, outcomes (till 10 days from admission) were recorded in a specially designated proforma. All these patients underwent echocardiographic imaging and the incidence and severity of MR were noted. The presence and degree of MR were evaluated using the proximal isovelocity surface area method. The ejection fraction was measured using the Simpson's method. Statistical analysis was done using the SPSS software. Figure 1 depicts an ECHO image showing IMR.

## RESULTS AND ANALYSIS

- Incidence of IMR in patients with first episode ACS in our hospital was 25%.

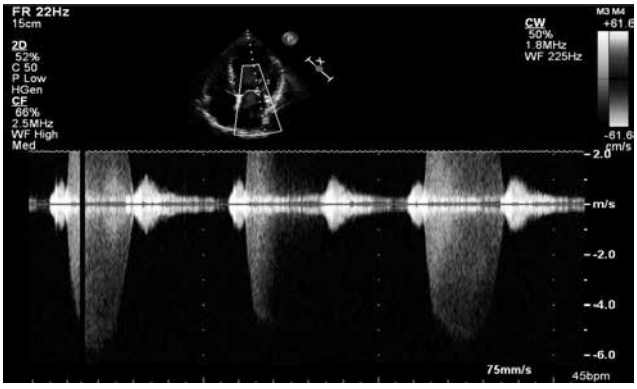


**Figure 1.** ECHO image showing IMR (continuous wave Doppler).

**Table 1.** Patient Characteristics

| Variables | | MR | | Pearson Chi-square | P value |
|---|---|---|---|---|---|
| | | Present | Absent | | |
| Age | <60 years | 3 | 20 | 3.346 | 0.067 |
| | >60 years | 9 | 16 | | |
| Dyslipidemia | Present | 12 | 34 | 0.658 | 0.417 |
| | Absent | 0 | 2 | | |
| Diabetes mellitus | Present | 10 | 15 | 6.211 | 0.013* |
| | Absent | 2 | 21 | | |
| Systemic hypertension | Present | 3 | 12 | 0.356 | 0.551 |
| | Absent | 9 | 24 | | |
| BMI | Under weight | 2 | 5 | 4.726 | 0.094 |
| | Normal Weight | 3 | 21 | | |
| | Over weight | 7 | 10 | | |
| Smoking | Present | 3 | 7 | 0.247 | 0.616 |
| | Absent | 9 | 29 | | |
| Type of MI | IWMI | 3 | 9 | 1.133 | 0.287 |
| | IWMI with RV extension | 6 | 12 | | |
| | AWMI | 3 | 15 | | |
| Level of cardiac enzymes | Normal | 3 | 6 | 0.247 | 0.613 |
| | Increase | 9 | 30 | | |
| Killip class | I | 1 | 9 | 3.656 | 0.299 |
| | II | 6 | 8 | | |
| | III | 3 | 10 | | |
| | IV | 2 | 9 | | |

*Statistically significant ($p < 0.05$).

- All patients with MR (n = 12) had dyslipidemia.
- Incidence of IMR in patients with diabetes mellitus was higher (n = 10) than the incidence of IMR in nondiabetic patients (n = 2), which was statistically significant (p = 0.013).
- Systemic hypertension, body mass index (BMI), smoking, level of cardiac enzymes had less effect on incidence of IMR (Table 1).

## DISCUSSION

- IMR was found in 25% of ACS patients in our study population, which is in accordance with older studies.
- It was found to be higher in older age group, diabetics, dyslipidemics and IWMI with right ventricular extension patients, which was consistent with previous studies.

## CONCLUSION

Mild functional IMR following ACS is a very common finding on echocardiographic analysis. It was found to be more likely in elderly, diabetics and dyslipidemics.

## SUGGESTED READING


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### CDC Updates Guidance on Travel for Fully Vaccinated People

The CDC has issued updated guidance on travel for individuals who are fully vaccinated.

In line with recent studies looking into the effects of vaccination in real-world scenario, the agency recommends that fully vaccinated people can travel at low risk to themselves. A person is fully vaccinated 2 weeks after getting the last recommended dose of the vaccine. The agency states that fully vaccinated people can travel within the United States and do not require COVID-19 testing or self-quarantine after travel if they continue to take COVID-19 precautions while traveling, including wearing a mask, avoiding crowds, social distancing and washing hands frequently… (*CDC*)

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