Background Monocytes are implicated in the initiation and progression of the atherosclerotic plaque contributing to plaque instability and rupture. Little is known about the role of the three phenotypically and functionally different monocyte subpopulations in determining ventricular remodelling following ST elevation myocardial infarction (STEMI). Mon1 are the ‘classical’ monocytes with inflammatory action, whilst Mon3 are considered reparative with fibroblast deposition ability. The function of the newly described Mon2 subset is yet to be fully described.

Method STEMI patients (n=196, mean age 62±13 years; 72% male) treated with percutaneous revascularization were recruited within the first 24 h post-infarction. Peripheral blood monocyte subpopulations were enumerated and characterised using flow cytometry after staining for CD14, CD16 and CCR2. Phenotypically, monocyte subpopulations are defined as: CD14+CD16−CCR2+ (Mon1), CD14++CD16+CCR2+ (Mon2) and CD14+CD16++CCR2− (Mon3) cells. Transthoracic 2D echocardiography was performed within 7 days and at 6 months post infarct to assess ventricular volumes, mass, systolic, and diastolic functions as well as strain and strain rate.

Results Using linear regression analysis higher counts for Mon1, and lower counts for Mon2 and Mon3 were significantly associated with the baseline left ventricular ejection fraction (LVEF) within 7 days post infarct (table 1). At 6 months post STEMI lower counts of Mon2 remained positively associated with a decrease in LVEF at completion of remodelling (p=0.002).

Conclusion Peripheral monocytes of all three subsets correlate with LVEF after a myocardial infarction. High counts of the inflammatory Mon1 are associated with the reduced baseline ejection fraction post infarction. After remodelling, the convalescent ejection fraction was independently predicted by monocyte subpopulation 2. As lower counts depicted negative ventricular remodelling, this suggests a possible myofibroblast deposition and angiogenesis role for the newly described intermediate monocyte subpopulation Mon2 as opposed to the previously anticipated inflammatory role.

### Table 1 Monocyte subpopulations and correlation with ejection fraction

<table>
<thead>
<tr>
<th>Monocytes mean florescence intensity (cells/μl)</th>
<th>Left ventricular ejection fraction (%) at 6 months post infarct</th>
<th>Left ventricular ejection fraction (%) at 6 months post infarct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β value</td>
<td>p Value</td>
</tr>
<tr>
<td>Total Mon</td>
<td>0.31</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>Mon 1</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Mon 2</td>
<td>−0.28</td>
<td>0.001</td>
</tr>
<tr>
<td>Mon 3</td>
<td>−0.27</td>
<td>0.001</td>
</tr>
</tbody>
</table>

D03 MONOCYTE SUBPOPULATION COUNTS AND ASSOCIATIONS WITH LEFT VENTRICULAR EJECTION FRACTION POST ST ELEVATION MYOCARDIAL INFARCTION

A G Ghattas,1 E S Shantsila,1 H R G Griffiths,2 G Y L Lip1 1University of Birmingham Centre for Cardiovascular Sciences; 2Aston University
doi:10.1136/heartjnl-2013-304019.43
043 MONOCYTE SUBPOPULATION COUNTS AND ASSOCIATIONS WITH LEFT VENTRICULAR EJECTION FRACTION POST ST ELEVATION MYOCARDIAL INFARCTION

A G Ghattas, E S Shantsila, H R G Griffiths and G Y L Lip

Heart 2013 99: A31
doi: 10.1136/heartjnl-2013-304019.43

Updated information and services can be found at:
http://heart.bmj.com/content/99/suppl_2/A31.2

These include:

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic Collections
Articles on similar topics can be found in the following collections
- Acute coronary syndromes (2742)
- Drugs: cardiovascular system (8842)
- Clinical diagnostic tests (4779)
- Echocardiography (2127)
- Hypertension (3006)

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/