# CORRECTION

Lancaster MC, Salem Omar AM, Narula S, Kulkarni H, Narula J, Sengupta PP

## Phenotypic Clustering of Left Ventricular Diastolic Function Parameters: Patterns and Prognostic Relevance

### J Am Coll Cardiol Img 2018 Apr 18 [E-pub ahead of print].

The previous published online version of this article (posted on April 18, 2018) had errors in some of the p values reported in Tables 1, 2, 4, and 5. The online version of the article has been revised with the correct p values. There were no changes in the other tables or any other content of the article. The corrected tables are below:

**TABLE 1** Comparison of Characteristics Between Conventional Categories in Assessment of the Presence or Absence of DD

| | All Patients (N = 559) | No DD (n = 359) | Indeterminate (n = 120) | DD (n = 80) | p Value |
|---|---|---|---|---|---|
| Age, yrs | 59.4 ± 15.0 | 54.8 ± 14.4 | 65.0 ± 12.1 | 71.9 ± 12.1 | <0.001*†‡ |
| Female | 344 (62) | 218 (61) | 76 (63) | 51 (64) | 0.789 |
| BMI | 27.7 ± 5.88 | 27.4 ± 5.80 | 28.5 ± 6.20 | 27.8 ± 5.65 | 0.255 |
| Hemoglobin, g/dl | 12.3 ± 1.93 | 12.4 ± 1.93 | 12.5 ± 1.67 | 11.6 ± 2.07 | 0.00606†‡ |
| Creatinine, mg/dl | 1.08 ± 0.95 | 1.04 ± 0.919 | 1.06 ± 0.458 | 1.31 ± 1.42 | 0.140 |
| Hypertension | 241 (43) | 126 (35) | 67 (56) | 49 (61) | <0.001 |
| Diabetes | 105 (19) | 48 (13) | 32 (27) | 26 (33) | <0.001 |
| Hyperlipidemia | 184 (33) | 98 (27) | 50 (42) | 36 (45) | 0.001 |
| Current smoker | 40 (7) | 28 (8) | 10 (8) | 2 (3) | 0.214 |
| COPD | 33 (6) | 18 (5) | 11 (9) | 4 (5) | 0.231 |
| LVMi, g/m$^2$ | 78.1 ± 21.0 | 73.6 ± 18.8 | 80.3 ± 19.4 | 94.9 ± 23.7 | <0.001*†‡ |
| EF, % | 62.5 ± 5.3 | 62 ± 5.2 | 63.4 ± 5.5 | 63.3 ± 5.8 | 0.02* |
| E, m/s | 0.73 ± 0.2 | 70 ± 16 | 72 ± 19 | 87 ± 27 | <0.001†‡ |
| A, m/s | 0.74 ± 0.23 | 159 ± 48 | 136 ± 40 | 118 ± 48 | <0.001*†‡ |
| E/A | 1.07 ± 0.44 | 1.11 ± 0.42 | 0.95 ± 0.34 | 1.01 ± 0.58 | 0.001* |
| e′ septal, cm/s | 6.94 ± 3.2 | 7.8 ± 2.6 | 5.4 ± 4.4 | 4.6 ± 6.9 | <0.001*†‡ |
| E/e′ | 11.80 ± 5.3 | 9.5 ± 2.6 | 13.8 ± 4.4 | 19.4 ± 6.9 | <0.001*†‡ |
| TR velocity, m/s | 2.3 ± 0.84 | 2.18 ± 0.34 | 2.36 ± 0.48 | 2.69 ± 0.6 | <0.001*†‡ |
| LAVi, ml/m$^2$ | 32.2 ± 11.0 | 28.4 ± 8.7 | 35.1 ± 9.8 | 45.2 ± 11.3 | <0.001*†‡ |

Values are mean ± SD or n (%). *p < 0.05 between No DD and Indeterminate. †p < 0.05 between No DD and DD. ‡p < 0.05 between Indeterminate and DD.

A = late diastolic atrial contraction mitral wave velocity; BMI = body mass index; COPD = chronic obstructive pulmonary disease; DD = diastolic dysfunction; E = early diastolic mitral wave velocity; e′ = tissue Doppler-derived early diastolic mitral annular velocity; EF = ejection fraction; LAVi = left atrial volume index; LVMi = left ventricular mass index; TR = tricuspid regurgitation.

**TABLE 2  Comparison of Characteristics Between Cluster-Based Groupings for Assessing the Presence or Absence of DD**

|  | All Patients (N = 559) | Cluster 1 (n = 460) | Cluster 2 (n = 99) | p Value |
|---|---|---|---|---|
| Age, yrs | 59.4 ± 15.0 | 58.4 ± 14.6 | 64.3 ± 16.0 | <0.001 |
| Female | 344 (62) | 287 (62) | 57 (58) | 0.372 |
| BMI | 27.7 ± 5.88 | 27.6 ± 5.87 | 27.1 ± 5.91 | 0.629 |
| Hemoglobin, g/dl | 12.3 ± 1.93 | 12.5 ± 1.84 | 11.8 ± 2.19 | 0.006 |
| Creatinine, mg/dl | 1.08 ± 0.95 | 1.05 ± 0.899 | 1.25 ± 1.11 | 0.1 |
| Hypertension | 241 (43) | 185 (40) | 56 (57) | 0.003 |
| Diabetes | 105 (19) | 82 (18) | 23 (23) | 0.212 |
| Hyperlipidemia | 184 (33) | 152 (33) | 32 (32) | 0.890 |
| Current smoker | 40 (7) | 34 (7) | 6 (6) | 0.641 |
| COPD | 33 (6) | 29 (6) | 4 (4) | 0.386 |
| LVMi, g/m$^2$ | 78.1 ± 21.0 | 74.8 ± 19.7 | 92.9 ± 20.5 | <0.001 |
| EF, % | 62.5 ± 5.3 | 62.0 ± 5.4 | 63 ± 5.1 | 0.221 |
| E, m/s | 0.73 ± 0.2 | 70.4 ± 16.8 | 85 ± 26 | <0.001 |
| A, m/s | 0.74 ± 0.23 | 149.0 ± 47.0 | 144 ± 57 | 0.357 |
| E/A | 1.07 ± 0.44 | 1.04 ± 0.39 | 1.2 ± 0.58 | 0.002 |
| e′ septal, cm/s | 6.94 ± 3.2 | 7.0 ± 2.4 | 6.4 ± 2.3 | 0.028 |
| E/e′ | 11.80 ± 5.3 | 11.1 ± 4.6 | 14.9 ± 7.0 | <0.001 |
| TR velocity, m/s | 2.3 ± 0.84 | 2.24 ± 0.41 | 2.53 ± 0.55 | <0.001 |
| LAVi, ml/m$^2$ | 32.2 ± 11.01 | 28.4 ± 7.0 | 50.0 ± 8.8 | <0.001 |

Values are mean ± SD or n (%).
Abbreviations as in Table 1.

**TABLE 4  Comparison of Characteristics Between Conventional Diagnostic Categories for Grading Severity of DD**

|  | All (N = 387) | Grade I DD (n = 114) | Grade II DD (n = 236) | Grade III DD (n = 37) | p Value |
|---|---|---|---|---|---|
| Age, yrs | 75.1 ± 14.4 | 68.5 ± 16.0 | 77.8 ± 12.5 | 78.5 ± 13.8 | <0.001 |
| Female | 186 (48) | 40 (35) | 133 (56) | 13 (35) | <0.001*†‡ |
| BMI | 27.4 ± 5.42 | 27.4 ± 5.32 | 27.5 ± 5.65 | 26.3 ± 3.86 | 0.487 |
| Hemoglobin, g/dl | 11.2 ± 2.01 | 11.5 ± 2.26 | 11.0 ± 1.94 | 11.6 ± 1.94 | 0.0808* |
| Creatinine, mg/dl | 1.32 ± 1.01 | 1.18 ± 0.942 | 1.34 ± 1.02 | 1.53 ± 1.11 | 0.1943 |
| Diabetes | 99 (26) | 22 (19) | 66 (28) | 11 (30) | 0.182 |
| Hypertension | 249 (64) | 63 (55) | 163 (69) | 23 (62) | 0.039 |
| Hyperlipidemia | 210 (54) | 57 (50) | 133 (56) | 20 (54) | 0.535 |
| Current smoker | 21 (5) | 9 (8) | 10 (4) | 2 (5) | 0.367 |
| COPD | 32 (8) | 10 (9) | 16 (7) | 6 (16) | 0.149‡ |
| rEF | 55 (14) | 32 (28) | 16 (7) | 7 (19) | <0.001*†‡ |
| LVH/CR | 252 (65) | 80 (70) | 147 (62) | 25 (68) | 0.331 |
| LVMi, g/m$^2$ | 112.0 ± 86.7 | 117.0 ± 153.0 | 108.0 ± 32.0 | 120.0 ± 33.2 | 0.581 |
| EF, % | 58.3 ± 12.7 | 55.5 ± 60.5 | 60.5 ± 11.2 | 52.7 ± 14.0 | <0.001*‡ |
| E, m/s | 0.905 ± 0.280 | 0.723 ± 0.217 | 0.960 ± 0.262 | 1.12 ± 0.265 | <0.001*†‡ |
| A, m/s | 0.962 ± 0.358 | 0.872 ± 0.312 | 1.09 ± 0.312 | 0.436 ± 0.131 | <0.001*†‡ |
| E/A | 1.09 ± 0.672 | 0.895 ± 0.325 | 0.934 ± 0.315 | 2.73 ± 0.896 | <0.001†‡ |
| e′ septal, cm/s | 4.92 ± 1.71 | 5.95 ± 2.13 | 4.39 ± 1.16 | 5.12 ± 1.69 | <0.001*†‡ |
| E/e′ | 20.6 ± 9.85 | 13.8 ± 7.31 | 23.3 ± 9.07 | 24.7 ± 10.9 | <0.001*† |
| TR velocity, m/s | 2.60 ± 0.536 | 2.32 ± 0.347 | 2.68 ± 0.524 | 2.97 ± 0.680 | <0.001*†‡ |
| LAVi, ml/m$^2$ | 44.5 ± 15.1 | 33.2 ± 10.7 | 48.2 ± 13.1 | 55.7 ± 18.3 | <0.001*†‡ |

Values are mean ± SD or n (%). *p < 0.05 between grades I and II. †p < 0.05 between grades I and III. ‡p < 0.05 between grades II and III.
LVH/CR = left ventricular hypertrophy or concentric remodeling; rEF = reduced ejection fraction; other abbreviations as in Table 1.

**TABLE 5  Comparison of Characteristics Between Cluster-Based Groupings for Grading Severity of DD**

|  | All (N = 387) | Cluster 1 (n = 236) | Cluster 2 (n = 151) | p Value |
|---|---|---|---|---|
| Age, yrs | 75.1 ± 14.4 | 73.3 ± 14.6 | 78.0 ± 13.6 | 0.002 |
| Female | 186 (48) | 105 (44) | 81 (54) | 0.08 |
| BMI | 27.4 ± 5.42 | 27.4 ± 5.41 | 27.3 ± 5.44 | 0.944 |
| Hemoglobin, g/dl | 11.2 ± 2.06 | 11.4 ± 2.08 | 11.0 ± 2.00 | 0.06 |
| Creatinine, mg/dl | 1.32 ± 1.01 | 1.17 ± 0.671 | 1.52 ± 1.33 | <0.001 |
| Diabetes | 99 (26) | 56 (24) | 43 (28) | 0.296 |
| Hypertension | 249 (64) | 144 (61) | 105 (70) | 0.09 |
| Hyperlipidemia | 210 (54) | 127 (54) | 83 (55) | 0.824 |
| Current smoker | 21 (5) | 12 (5) | 9 (6) | 0.711 |
| COPD | 32 (8) | 18 (8) | 14 (9) | 0.567 |
| rEF | 55 (14) | 40 (17) | 15 (10) | 0.054 |
| LVH/CR | 252 (65) | 146 (62) | 106 (70) | 0.093 |
| LVMi, g/m$^2$ | 112.0 ± 86.7 | 109.0 ± 110.0 | 116.0 ± 29.0 | 0.432 |
| EF, % | 58.3 ± 12.7 | 58.2 ± 12.8 | 58.5 ± 12.5 | 0.820 |
| E, m/s | 0.905 ± 0.280 | 0.828 ± 0.235 | 1.03 ± 0.301 | <0.001 |
| A, m/s | 0.962 ± 0.358 | 0.940 ± 0.319 | 0.996 ± 0.409 | 0.132 |
| E/A | 1.09 ± 0.672 | 0.983 ± 0.488 | 1.27 ± 0.857 | <0.001 |
| e′ septal, cm/s | 4.92 ± 1.71 | 5.18 ± 1.78 | 4.51 ± 1.49 | <0.001 |
| E/e′ | 20.6 ± 9.85 | 18.0 ± 8.48 | 24.9 ± 10.4 | <0.001 |
| TR velocity, m/s | 2.60 ± 0.536 | 2.50 ± 0.483 | 2.76 ± 0.576 | <0.001 |
| LAVi, ml/m$^2$ | 44.5 ± 15.1 | 35.2 ± 6.88 | 59.1 ± 12.7 | <0.001 |

Values are mean ± SD or n (%).

Abbreviations as in **Tables 1 and 4**.

The authors apologize for these errors.

https://doi.org/10.1016/j.jcmg.2018.05.006