*Twin Research and Human Genetics*

Article title: Familial aggregation of migraine and depression: insights from a large Australian twin sample

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**Supplement materials**

Table S1: Twin-pair migraine-migraine: cross-tabulations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Zygosity  group | Proband | Co-twin | | | | |
| No migraine | Self-report migraine | ID migraine | IHS migraine | Any migraine |
| Total sample | No migraine | 1882 | 356 | 321 | 179 | 856 |
| Self-report migraine | 467 | 163 | 146 | 81 | 390 |
| ID migraine | 466 | 159 | 198 | 105 | 462 |
| IHS migraine | 251 | 102 | 116 | 327 | 545 |
| Any migraine | 1184 | 424 | 460 | 513 | 1397 |
|  | | | | | | |
| MZ | No migraine | 905 | 159 | 162 | 63 | 384 |
| Self-report migraine | 196 | 89 | 87 | 34 | 210 |
| ID migraine | 186 | 88 | 138 | 58 | 284 |
| IHS migraine | 67 | 34 | 49 | 141 | 224 |
| Any migraine | 449 | 211 | 274 | 233 | 718 |
|  | | | | | | |
| DZ | No migraine | 977 | 197 | 159 | 116 | 472 |
| Self-report migraine | 271 | 74 | 59 | 47 | 180 |
| ID migraine | 280 | 71 | 60 | 47 | 178 |
| IHS migraine | 184 | 68 | 67 | 186 | 321 |
| Any migraine | 735 | 213 | 186 | 280 | 679 |
|  | | | | | | |
| Same-sex DZ | No migraine | 547 | 112 | 105 | 82 | 299 |
| Self-report migraine | 134 | 48 | 50 | 40 | 138 |
| ID migraine | 118 | 39 | 36 | 38 | 113 |
| IHS migraine | 93 | 44 | 45 | 122 | 211 |
| Any migraine | 345 | 131 | 131 | 200 | 462 |
|  | | | | | | |
| MZ F-F | No migraine | 476 | 107 | 120 | 35 | 262 |
| Self-report migraine | 121 | 64 | 69 | 28 | 161 |
| ID migraine | 134 | 64 | 113 | 53 | 230 |
| IHS migraine | 50 | 24 | 41 | 124 | 189 |
| Any migraine | 305 | 152 | 223 | 205 | 580 |
|  | | | | | | |
| MZ M-M | No migraine | 429 | 52 | 42 | 28 | 122 |
| Self-report migraine | 75 | 25 | 18 | 6 | 49 |
| ID migraine | 52 | 24 | 25 | 5 | 54 |
| IHS migraine | 17 | 10 | 8 | 17 | 35 |
| Any migraine | 144 | 59 | 51 | 28 | 138 |
|  | | | | | | |
| DZ F-F | No migraine | 268 | 62 | 69 | 61 | 192 |
| Self-report migraine | 76 | 32 | 37 | 28 | 97 |
| ID migraine | 81 | 31 | 33 | 29 | 93 |
| IHS migraine | 72 | 34 | 42 | 109 | 185 |
| Any migraine | 229 | 97 | 112 | 166 | 375 |
|  | | | | | | |
| DZ M-M | No migraine | 279 | 50 | 36 | 21 | 107 |
| Self-report migraine | 58 | 16 | 13 | 12 | 41 |
| ID migraine | 37 | 8 | 3 | 9 | 20 |
| IHS migraine | 21 | 10 | 3 | 13 | 26 |
| Any migraine | 116 | 34 | 19 | 34 | 87 |
|  | | | | | | |
| DZ F-M | No migraine | 430 | 85 | 54 | 34 | 173 |
| Self-report migraine | 137 | 26 | 9 | 7 | 42 |
| ID migraine | 162 | 32 | 24 | 9 | 65 |
| IHS migraine | 91 | 24 | 22 | 64 | 110 |
| Any migraine | 390 | 82 | 55 | 80 | 217 |
|  | | | | | | |
| DZ M-F | No migraine | 430 | 137 | 162 | 91 | 390 |
| Self-report migraine | 85 | 26 | 32 | 24 | 82 |
| ID migraine | 54 | 9 | 24 | 22 | 55 |
| IHS migraine | 34 | 7 | 9 | 64 | 80 |
| Any migraine | 173 | 42 | 65 | 110 | 217 |

IHS: the International Headache Society; MZ: monozygotic twin pairs; DZ: dizygotic twin pairs; F: female; M: male.

Table S2: Twin-pair depression-depression: cross-tabulations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Zygosity group | Proband | Co-twin | | |
| No depression | MDD | Any depression |
| Total sample | No depression | 2017 | 804 | 1028 |
| MDD | 857 | 856 | 997 |
| Any depression | 1101 | 991 | 1173 |
|  | | | | |
| MZ | No depression | 1012 | 339 | 441 |
| MDD | 306 | 439 | 496 |
| Any depression | 427 | 497 | 576 |
|  | | | | |
| DZ | No depression | 1005 | 465 | 587 |
| MDD | 551 | 417 | 501 |
| Any depression | 674 | 494 | 597 |
|  | | | | |
| Same-sex DZ | No depression | 570 | 300 | 370 |
| MDD | 282 | 262 | 308 |
| Any depression | 344 | 313 | 369 |
|  | | | | |
| MZ F-F | No depression | 634 | 241 | 301 |
| MDD | 192 | 334 | 371 |
| Any depression | 270 | 372 | 418 |
|  | | | | |
| MZ M-M | No depression | 378 | 98 | 140 |
| MDD | 114 | 105 | 125 |
| Any depression | 157 | 125 | 158 |
|  | | | | |
| DZ F-F | No depression | 310 | 202 | 258 |
| MDD | 199 | 191 | 218 |
| Any depression | 240 | 224 | 256 |
|  | | | | |
| DZ M-M | No depression | 260 | 98 | 112 |
| MDD | 83 | 71 | 90 |
| Any depression | 104 | 89 | 113 |
|  | | | | |
| DZ F-M | No depression | 435 | 165 | 217 |
| MDD | 269 | 155 | 193 |
| Any depression | 330 | 181 | 228 |
|  | | | | |
| DZ M-F | No depression | 435 | 269 | 330 |
| MDD | 165 | 155 | 181 |
| Any depression | 217 | 193 | 228 |

MDD: major depressive disorder. MZ: monozygotic twin pairs; DZ: dizygotic twin pairs; F: female; M: male.

Table S3: Twin-pair any migraine-any depression: cross-tabulations

|  |  |  |  |
| --- | --- | --- | --- |
| Zygosity group | Proband | Co-twin | |
| No any depression | Any depression |
| Total sample | No any migraine | 1669 | 1069 |
| any migraine | 1449 | 1132 |
|  | | | |
| MZ | No any migraine | 813 | 476 |
| any migraine | 626 | 541 |
|  | | | |
| DZ | No any migraine | 856 | 593 |
| any migraine | 823 | 591 |
|  | | | |
| Same-sex DZ | No any migraine | 479 | 367 |
| any migraine | 435 | 372 |
|  | | | |
| MZ F-F | No any migraine | 441 | 297 |
| any migraine | 463 | 422 |
|  | | | |
| MZ M-M | No any migraine | 372 | 179 |
| any migraine | 163 | 119 |
|  | | | |
| DZ F-F | No any migraine | 241 | 219 |
| any migraine | 309 | 295 |
|  | | | |
| DZ M-M | No any migraine | 238 | 148 |
| any migraine | 126 | 77 |
|  | | | |
| DZ F-M | No any migraine | 377 | 226 |
| any migraine | 388 | 219 |
|  | | | |
| DZ M-F | No any migraine | 444 | 376 |
| any migraine | 208 | 182 |

MZ: monozygotic twin pairs; DZ: dizygotic twin pairs; F: female; M: male.

Table S4: Twin-pair any depression-any migraine: cross-tabulations

|  |  |  |  |
| --- | --- | --- | --- |
| Zygosity group | Proband | Co-twin | |
| No any migraine | Any migraine |
| Total sample | No any depression | 1848 | 1197 |
| any depression | 1218 | 1056 |
|  | | | |
| MZ | No any depression | 884 | 569 |
| any depression | 470 | 533 |
|  | | | |
| DZ | No any depression | 964 | 628 |
| any depression | 748 | 523 |
|  | | | |
| Same-sex DZ | No any depression | 520 | 420 |
| any depression | 372 | 341 |
|  | | | |
| MZ F-F | No any depression | 501 | 434 |
| any depression | 280 | 408 |
|  | | | |
| MZ M-M | No any depression | 383 | 135 |
| any depression | 190 | 125 |
|  | | | |
| DZ F-F | No any depression | 267 | 301 |
| any depression | 230 | 266 |
|  | | | |
| DZ M-M | No any depression | 253 | 119 |
| any depression | 142 | 75 |
|  | | | |
| DZ F-M | No any depression | 444 | 208 |
| any depression | 376 | 182 |
|  | | | |
| DZ M-F | No any depression | 377 | 388 |
| any depression | 226 | 219 |

MZ: monozygotic twin pairs; DZ: dizygotic twin pairs; F: female; M: male.

Table S5: Twin-pair IHS migraine-MDD: cross-tabulations

|  |  |  |  |
| --- | --- | --- | --- |
| Zygosity group | Proband | Co-twin | |
| No MDD | MDD |
| Total sample | No IHS migraine | 1669 | 876 |
| IHS migraine | 424 | 318 |
|  | | | |
| MZ | No IHS migraine | 813 | 384 |
| IHS migraine | 139 | 137 |
|  | | | |
| DZ | No IHS migraine | 856 | 492 |
| IHS migraine | 285 | 181 |
|  | | | |
| Same-sex DZ | No IHS migraine | 479 | 308 |
| IHS migraine | 167 | 114 |
|  | | | |
| MZ F-F | No IHS migraine | 441 | 256 |
| IHS migraine | 109 | 119 |
|  | | | |
| MZ M-M | No IHS migraine | 372 | 128 |
| IHS migraine | 30 | 18 |
|  | | | |
| DZ F-F | No IHS migraine | 241 | 184 |
| IHS migraine | 143 | 98 |
|  | | | |
| DZ M-M | No IHS migraine | 238 | 124 |
| IHS migraine | 24 | 16 |
|  | | | |
| DZ F-M | No IHS migraine | 377 | 184 |
| IHS migraine | 118 | 67 |
|  | | | |
| DZ M-F | No IHS migraine | 444 | 313 |
| IHS migraine | 52 | 53 |

IHS: the International Headache Society; MDD: major depressive disorder; MZ: monozygotic twin pairs; DZ: dizygotic twin pairs; F: female; M: male.

Table S6: Twin-pair MDD-IHS migraine: cross-tabulations

|  |  |  |  |
| --- | --- | --- | --- |
| Zygosity group | Proband | Co-twin | |
| No IHS migraine | IHS migraine |
| Total sample | No MDD | 1848 | 324 |
| MDD | 959 | 319 |
|  | | | |
| MZ | No MDD | 884 | 132 |
| MDD | 348 | 142 |
|  | | | |
| DZ | No MDD | 964 | 192 |
| MDD | 611 | 177 |
|  | | | |
| Same-sex DZ | No MDD | 520 | 140 |
| MDD | 298 | 124 |
|  | | | |
| MZ F-F | No MDD | 501 | 101 |
| MDD | 210 | 122 |
|  | | | |
| MZ M-M | No MDD | 383 | 31 |
| MDD | 138 | 20 |
|  | | | |
| DZ F-F | No MDD | 267 | 112 |
| MDD | 189 | 100 |
|  | | | |
| DZ M-M | No MDD | 253 | 28 |
| MDD | 109 | 24 |
|  | | | |
| DZ F-M | No MDD | 444 | 52 |
| MDD | 313 | 53 |
|  | | | |
| DZ M-F | No MDD | 377 | 118 |
| MDD | 184 | 67 |

IHS: the International Headache Society; MDD: major depressive disorder; MZ: monozygotic twin pairs; DZ: dizygotic twin pairs; F: female; M: male.