Migraine, depression and other types of pain: a common etiology?

L Ligthart [1,2], DI Boomsma[1] & BWJH Penninx [3,4,5]

[1]VU University, Dept. of Biological Psychology, Amsterdam, the Netherlands
[2]EMGO+ Institute for Health and Care Research, VU University Medical Centre, Amsterdam, the Netherlands
[3]Department of Psychiatry and EMGO+ Institute for Health and Care Research, VU University Medical Centre, Amsterdam, the Netherlands
[4]Department of Psychiatry, Leiden University Medical Centre, Leiden, The Netherlands
[5]Department of Psychiatry, University Medical Centre Groningen, Groningen, the Netherlands

e-mail: rsl.ligthart@psy.vu.nl

Background and aims

There is a fascinating comorbidity between migraine and depression. Depression is also known to be comorbid with other pain conditions. Comorbidity of migraine and other pain conditions has been reported, but has received less attention. Here, we investigate whether migraine is associated with pain at several other body sites, independent of its comorbidity with depression.

Methods

We analysed data from the Netherlands Study of Depression and Anxiety (NESDA), including 2981 individuals (1002 males, 1979 females).

Depression diagnoses were made with a CIDI interview (based on DSM-IV criteria).

Migraine was assessed with questionnaire data based on ICHD-II criteria. Two migraine classifications were applied: "strict migraine" refers to headache fulfilling all ICHD-II criteria for migraine without aura; "all migraine" refers to all headache fulfilling criteria for either migraine without aura (ICHD-II 1.1) or probable migraine (IHCD-II 1.6). Headaches not fulfilling criteria for probable or strict migraine were classified as non-migraine headache.

The presence of pain was assessed with the Graded Chronic Pain Scale. All participants were asked whether they had experienced pain in seven different locations (back, neck, head, chest, joints, stomach, face) in the last six months.

All statistical analyses were performed using SPSS 17.0.

Results (1)

The sample included 970 individuals with no lifetime depression diagnosis, 789 with past depression and 1222 with current depression. A total of 1195 individuals (40%) had migraine or a milder form of migrainous headache.

Results (2)

Individuals with current depression reported more (non-headache) pain sites than individuals with past depression, who in turn reported more pain sites than individuals with no lifetime depression diagnosis (**Table 1**).

Table 1: *number of reported pain sites by depression and migraine status*

	N	N (non-headache) pain sites (SD)
No depression	970	1.90 (1.43)
Past depression	789	2.41 (1.52)
Current depression	1222	3.04 (1.55)
No headache	1274	2.08 (1.47)
Non-migrainous headache	335	2.46 (1.49)
Probable migraine	426	2.73 (1.49)
Migraine	453	3.03 (1.61)

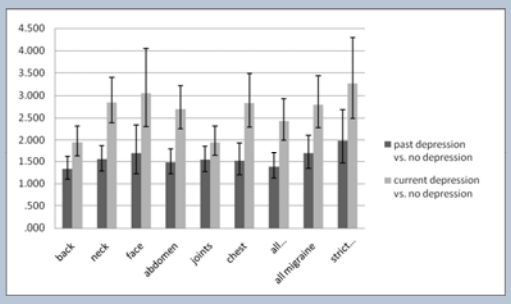

Figure 1: *Sex-adjusted OR of reporting pain location, depending on depression status. The error bars indicate 95% confidence intervals.*

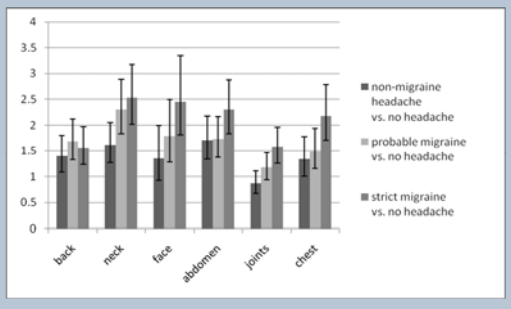

Figure 2: *Sex-adjusted OR of reporting pain location, depending on migraine status. The error bars indicate 95% confidence intervals.*

Results (3)

Linear regression analysis showed that depression status was a significant predictor of the number of reported pain symptoms ($t = 17.595$, $P < .001$). A similar effect was observed for migraine: the more severe the headache, the larger the number of other reported pain sites ($t = 12.572$, $P < .001$). This effect remained significant after correction for depression status ($t = 9.852$, $P < .001$).

Odds ratios for individual pain locations

Figures 1 and 2 show the sex-adjusted odds ratios for each separate pain location, depending on depression and migraine status. Although there was some variation between pain sites, both depression and migraine were significantly associated with all measured pain locations.

Discussion

These results confirm the comorbidity of depression, migraine and other pain conditions, and suggest that the comorbidity of migraine and other pain conditions is at least partly independent of depression. Considering the complex interrelationships between these disorders, it is recommended that migraine studies incorporate not only information on headache but also on comorbid psychiatric and pain conditions. Since these disorders often occur together, there may be shared etiological factors underlying them, which are not fully captured by studies that focus on headache only.

Future research aims include studying these phenotypes in a genetically informative sample to investigate the (potentially shared) genetic factors influencing these traits.