

Sexually Dimorphic Influence of COMT on Distress in the Immediate Aftermath of Trauma

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Background

Potentially complex interactions between functional genetic variations within the catechol-O-methyltransferase (*COMT*) gene suggest that a haplotype-based approach to evaluating the influence of this gene is useful. A large motor vehicle collision (MVC) patient sample provides the opportunity to assess peritraumatic distress severity (PDS) among individuals with and without one or more *COMT* LPS and HPS haplotypes.

Methods

European Americans ≥ 18 years of age presenting to the ED after MVC who did not have injuries requiring hospital admission were recruited. ED evaluation included an assessment of PDS (Peritraumatic Distress Inventory) and DNA collection (PAXgene Blood Tube). Genotyping at rs4633, rs4680, rs4818, and rs6269 was performed to identify *COMT* LPS and HPS haplotypes. Associations between these haplotypes and PDS were evaluated using t-test and linear regression analysis.

Results

9339 MVC patients were screened, 1584 were eligible, 949 were enrolled, and 838 have been genotyped. In crude analyses, PDS was associated with HPS haplotype presence (21.1 vs. 18.8, $t = 2.5$, $p = .013$), but not LPS presence (19.3 vs. 19.0, $t = .4$, $p = .670$). A significant sex \times HPS haplotype interaction was observed ($p = .030$); HPS haplotype presence increased PDS in women but not men (Table).

Conclusion

Among women presenting to the ED after MVC, the presence of one or more *COMT* HPS haplotypes is associated with increased peritraumatic distress severity.

Table		Association between HPS haplotype presence and peritraumatic distress severity among patients presenting to the emergency department after motor vehicle collision		
		No HPS (n=680)	HPS (151)	p
All	Total Severity	18.8 (9.9)	21.1 (10.0)	0.013
Men	Total Severity	16.3 (9.0)	15.2 (8.9)	0.453
Women	Total Severity	20.5 (10.2)	23.5 (9.4)	0.006
	Helplessness/Anger	4.4 (2.4)	5.0 (2.2)	0.014
	Loss of Control	2.6 (2.5)	3.5 (2.4)	0.002
	Guilt/Shame	1.7 (2.2)	1.9 (2.4)	0.267
	Life Threat	9.2 (5.0)	10.1 (4.9)	0.093