Acute Coronary Syndromes

THE FAMILIALITY OF MYOCARDIAL INFARCTION AND IDENTIFICATION OF HIGH-RISK PEDIGREES

Poster Contributions
Hall C
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Authors: _Stacey Knight_, J. Muhlestein, John Carlquist, Jeffrey Anderson, Benjamin Horne, Intermountain Medical Center, Murray, UT, USA, University of Utah, Salt Lake City, UT, USA

Background: While studies of myocardial infarction (MI) have found significant associations with genetic variants, these explain little of the overall heritability of MI. To expand the search for possible genetic causes of MI, we examined the familiality of several MI phenotypes and explored these phenotypes in high-risk pedigrees.

Methods: The Intermountain Genealogy Registry contains genealogies of ~700,000 patients in the Intermountain Healthcare System and was used to generate, for each MI phenotype, the genealogy index of familiality (GIF), which is 10,000 times the average pairwise kinship of coefficient for cases. The phenotypic characteristics of high-risk pedigrees (n=10) were also examined.

Results: The GIF varied by phenotype: all MI had GIF=0.448 (p<0.001), while for STEMI it was 0.49 (p=0.002), non-STEMI was 0.48 (p=0.09), early MI was 0.50 (p=0.36), and MI without traditional risk factors (i.e., diabetes, hypertension or hyperlipidemia) was 0.46 (p=0.36). For the high-risk pedigrees, most (75%) cases had a STEMI and most (91%) had a diagnosis of diabetes, hypertension or hyperlipidemia either before or after the MI.

Conclusions: The strength and significance of familiality differed by MI phenotype, with STEMI providing the strongest statistical evidence, although early-onset MI familiality was limited by sample size. In high-risk MI pedigrees, common risk factors were seen in most cases; thus, differentiating MI-associated genetic factors independent of these may be challenging.

Table: Phenotypes of Cases in High-Risk MI Pedigrees with >10 Relative Rate of MI compared to general patient population, >4 cases, and at least one sibship

Pedigree	MI Cases	Relative Rate	STEMI† n	STEMI† %	Non-STEMI† n	Non-STEMI† %	Early Onset* n	Early Onset* %	MI no comorbidities** n	MI no comorbidities** %	Hypertension*** n	Hypertension*** %	Hyperlipidemia*** n	Hyperlipidemia*** %	Diabetes*** n	Diabetes*** %
1	9	13.65	5	55.56%	5	55.56%	0	0.00%	1	11.11%	6	66.67%	5	55.56%	5	55.56%
2	8	10.65	6	75.00%	6	75.00%	0	0.00%	1	12.50%	5	62.50%	6	75.00%	8	100.00%
3	8	10.06	6	75.00%	2	25.00%	0	0.00%	2	25.00%	2	25.00%	4	50.00%	4	50.00%
4	7	12.33	6	85.71%	3	42.86%	0	0.00%	3	42.86%	3	42.86%	4	57.14%	6	85.71%
5	6	17.24	5	83.33%	2	33.33%	2	33.33%	3	50.00%	2	33.33%	0	0.00%	4	66.67%
6	6	10.24	4	66.67%	3	50.00%	0	0.00%	2	33.33%	3	50.00%	3	50.00%	3	50.00%
7	5	13.65	2	40.00%	3	60.00%	1	20.00%	2	40.00%	1	20.00%	2	40.00%	5	100.00%
8	5	10.92	5	100.00%	2	40.00%	1	20.00%	1	20.00%	4	80.00%	3	60.00%	4	80.00%
9	5	10.50	5	100.00%	0	0.00%	0	0.00%	0	0.00%	5	100.00%	3	60.00%	4	80.00%
10	5	10.50	4	80.00%	2	40.00%	4	80.00%	0	0.00%	1	20.00%	4	80.00%	4	80.00%

Note: †cases could have more than one MI * early onset defined as <60 years old for men and <65 for females ** The comorbidities were hypertension, hyperlipidemia, and diabetes and could not have been diagnosed at time of MI or prior. *** Hyperlipidemia, Hypertension and Diabetes is at any time in their lives.