HEREDITY FOR MYOCARDIAL INFARCTION DEMONSTRATESTWO-FOLDED INCREASED RISK FOR SIGNIFICANT RENAL DYSFUNCTION IN MIDDLE-AGE MEN BELONGING TO A COHORT OF 33,125 PATIENTS

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Conclusion

Our findings point towards that genetic variants may underlie predisposition to CKD in patients with heredity for MI. Males with heredity for MI at the age of 43 years has a 2 times higher risk (p=0.02) of belonging to the group with GFR less than 45 ml/min/1.73m^2 compared to those without heredity.

Introduction and aim

Chronic kidney disease (CKD) is an independent risk factor for end-stage renal disease and also for atherosclerotic cardiovascular diseases including myocardial infarction (MI). However, susceptibility to CKD varies considerably among individuals with known cardiovascular risk factors which suggests a role for genetic factors.

The aim of the present study was to evaluate a potential relationship between heredity for MI and renal dysfunction in middle-aged persons during long-term follow up of a large, population-based cohort.

Material and Methods

The cohort included 33,125 subjects (22 297 males and 10 828 females), aged 33-60 years at baseline, in a representative, population-based study which enrolled subjects from 1974 to 1992, in the city of Malmö. Median follow-up time was 26 years. Every participant filled in a self-administered questionnaire on medical and personal history including family history of cardiovascular disease. Heredity for MI was defined as mother or father having had MI and/or died from MI, and/or brother or sister having had MI. Estimated GFR (eGFR) was calculated from serum creatinine using the CKD-EPI formula. Height was measured to the nearest centimetre, weight was recorded at intervals of 0.1 kg and body mass index was calculated. Blood pressure was measured with standard method. Blood tests were drawn after an overnight fast. Serum creatinine was analyzed using kinetic alkaline picrate assay with stable normal range throughout the whole inclusion period. There were no methodological changes during the study time. Reference ranges: 60-100 µmol/l (females) and 80-115 µmol/l (males) were unchanged during the whole study period. The cohort showed a normal distribution of the parameters analyzed. The impact of heredity was analysed using both linear regression and binary logistic regression. A p-value less than 0.05 was considered as statistically significant.

Results

Data from CKD-EPI calculations show that 933/33125 (2.8%) of the whole cohort belongs to CKD stages 2 and 3. Corresponding figures are 1.6% for males and 5.4% for females. Males with heredity for MI at the age of 43 years has a 2 times higher risk (p=0.02) of belonging to the group with GFR less than 45 ml/min/1.73m^2 compared to those without heredity. For the whole cohort the increased risk was 1.6 times (p=0.07). Furthermore, in the whole cohort previous MI more than double-folded (HR 2.0, p<0.030) the risk of being in the group with GFR less than 60 ml/min/1.73m^2. For males the HR was 2.1 (p=0.046), for women this was not significant. This was also true at a cut-off at 45 ml/min/1.73m^2 that seven-folded (HR 7.47, p=0.001) the risk for the whole cohort and nearly ten-folded the risk (HR 9.2, p<0,001) for men but not significant for women.

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