

Assessment of erectile function in cardiovascular patients: the graphic questionnaire as a novel diagnostic test

Sandra Glavaš^{1*}, Lara Valenčić², Nataša Trbojević², Ana-Marija Tomašić², Sara Tibauth²,
Nikolina Turčić², Luka Zaputović³, Alen Ružić³

¹Institute for Emergency Medicine of Istria County, Pula, Croatia

²University of Rijeka School of Medicine, Rijeka, Croatia

³University of Rijeka School of Medicine, University Hospital Centre Rijeka, Rijeka, Croatia

The goal: The aim of the study was to investigate the applicability of a new, visual scale — based Graphic Questionnaire (GQ) we proposed for the assessment of erectile dysfunction (ED).

Patients and Methods: Erectile function was assessed in 185 patients under the age of 70, hospitalized at the Department of Cardiovascular Diseases, Clinic for Internal Medicine, University Hospital Centre Rijeka for various cardiovascular disease manifestations by using several self-administered questionnaires: International Index of Erectile Function-5 (IIEF-5); questionnaires used at the baseline and follow-up phase of the Massachusetts Male Aging Study (MMAS single question — MMAS-SQ and a baseline 9-question questionnaire — MMAS-9); the Erection Hardness Score (EHS), Brief Male Sexual Function Inventory (BMSFI), and finally, the newly created GQ. All of the questionnaires referred to one's erectile function during the period of 6 months prior to hospitalization.

Results: The mean age of the patients was 55.65±9.97 years. The most common indications for hospitalization were coronary artery disease (CAD) (n=82, 48%), and decompensated chronic heart failure (n=30, 18%): 37% of patients

hospitalized for CAD had ST segment elevation myocardial infarction, 30% had unstable angina pectoris, and 29% presented with non-ST segment elevation myocardial infarction. The prevalence of ED as determined by IIEF-5 was 58% (n= 99) and 70% (n=119), as classified by MMAS-SQ. Patients with ED, defined as any IIEF-5 score less than 22, were on average 5.7 years older (P<0.0001), had higher frequency of diabetes (by 19%, P<0.01), and somewhat higher level of uric acid (by 72 μmol/l, P<0,01). Patients with CAD were 5.06 years older and had lower values of EHS by 0.6 (P<0.05) than non-ischemic patients, independent of age. Correlations of GQ total score with total scores of IIEF-5 (r=0.75, P<0.0001) and BMSFI (r=0.81, P<0.0001), and MMAS-SQ categories (rho=-0,68, P<0.0001) were significant. The patients' age negatively correlated with the total GQ score (r=-0,492, P<0.0001). All three machine learning algorithms (Naive Bayes, k-nearest neighbours and support vector machines with radial-basis kernel) demonstrated a greater accuracy of GQ than IIEF-5, BMSFI and MMAS-9 in predicting ED severity.

Conclusion: Erectile dysfunction is highly prevalent among cardiovascular patients, associated with age, ischemic heart disease and diabetes mellitus. Graphic Questionnaire has demonstrated valuable properties in providing the diagnosis of ED and could be used for its screening in general population.

KEYWORDS: erectile dysfunction, questionnaire, coronary artery disease.

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*Address for correspondence: Sandra Glavaš, Ivana Žorža 70, HR-51000 Rijeka, Croatia.

Phone: +385-91-5830555

E-mail: glavas.sandr@gmail.com

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