Factors influencing coronary remodeling after stenting

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Aim: Evaluation the gender, inflammation and diabetes mellitus impact on coronary remodeling after stenting by assaying of myocardium infarction (MI), coronary spasm (CS) inducing unstable angina and in-stent restenosis (ISR) or in-stent thrombosis (IST).

Material and methods: In study 140 patients (101 men and 38 women) with age range of 42-73 years exposed to coronary stenting due to marked coronary stentosis have been taken. After coronary stenting (PCI) the evidences (MI, CS, ISR and IST) linked to negative coronary remodeling (NCRE) have been assayed using coronary angiography and intravascular ultrasound. Non-specific inflammation markers such as hsCRP, IL-6 and TNF-alpha were determined using ELISA initially and after PCI during 1 year: 72 h, 1, 3, 6 and 12 months.

Results: The rate of total NCRE evaluated during 1 year was as 27.86% and it has been markedly higher in men: 31.68% vs 18.42%. To underline that MI and IST have not been observed in women. The pre- and post-PCI levels of circulating inflammation markers were higher in patients with NCRE compared to pts without NCRE (reference pattern). The most pre-PCI difference (61%) was characteristic for hsPCR: 6.89 ± 0.21 vs 4.28 ± 0.11 g/l, p<0.01, and in women this marker was higher by 23.5%. The pre-PCI serum IL-6 and TNF-alpha concentrations exceeded reference indices by 27-32.5%. In first 72 h after PCI a rise till 9.3 g/l of hsCRP was established independently of NCRE risk. However further dynamics showed a higher hsCRP level in pts with NCRE after 6 (6.34 ± 0.19 vs 4.17 ± 0.12 g/l; p<0.01) and 12 months (6.76 ± 0.17 vs 3.42 ± 0.16 g/l; p<0.01), and women had more raised values. Elevated serum concentration of IL-6 and TNF-alpha in pts with CNRE were fixed especially after 72 h, 1 and 6 months. Diabetes mellitus was established in 33 from 140 pts. Among them the NCRE incidence was significantly higher comparatively to nod-diabetic individuals: 42.42 vs 22.77% (p<0.01). Remarkably that inflammation markers levels, predominantly hsCRP, have been higher in diabetes mellitus, especially in women, although men have increased risk of NCRE.

Conclusions: (1) Gender influences negative coronary remodeling after stenting, men being more susceptible to MI, CS, ISR and IST evolution averagely as 1.72:1. (2) Inflammation is closely linked to coronary remodeling after stenting, and pre-PCI level may be a predictor of NCRE risk. (3) Diabetes mellitus amplifies inflammation impact on CNRE risk mostly in men.