Can the Syntax Score Be Used in Clinical Practice? Results of a Inter- and Intra-Observable Variability Study

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Introduction: The Syntax score (SYS) was developed to provide guidance on optimal revascularization strategies for patients with multivessel and/or left main coronary artery disease (CAD). In daily practice, discrepancies between operators are common. We therefore assessed the inter- and intra-observer variability of the SYS.

Methods: Twenty coronary angiograms with multivessel and/or left main CAD were randomly chosen and evaluated by 8 blinded observers: 6 interventional cardiologists and 2 cardiac surgeons (4 staff members, 2 senior fellows, and 2 residents). Each operator estimated 1) a subjective score by classifying the angiograms in the three SYNTAX categories before calculating the SYS and 2) the SYS using the SYS calculator. The inter- and intra-observer reproducibility was assessed using intraclass correlation coefficients (ICC) and Cohen’s Kappa. Pearson’s chi square ($X^2$) test was used to compare the subjective score to the SYS and the received treatment to the SYS strategy.

Results: The coronary angiograms of 18 men and 2 women with multivessel CAD (n=16), left main CAD (n=1) or both (n=3) were evaluated. A marked variability of the subjective score was noted ($\text{ICC}=0.35$) among observers. The mean SYS was 24 +/-11 with significant differences between the observers ($p=0.02$). No difference was found according to experience ($p=0.34$) or specialty ($p=0.70$). There was a lack of inter-observer reproducibility ($\text{ICC}=0.67$ [0.51-0.82]) but intra-observer reproducibility was acceptable ($\text{ICC}=0.75$ [0.66-0.81]). The differences could be explained in part by a misuse of the SYS calculator. Compared to the SYS, the subjective score overestimated the severity of lesions ($X^2$ $p<0.01$), and applying the SYS strategy would have led to different therapeutic choices ($X^2$ $p<0.01$).

Conclusion: Inter-observer variability was noted when the SYS was calculated by operators with different backgrounds and training. Therefore use of the SYS by individual operators should be discouraged and a multidisciplinary approach recommended when choosing between coronary angioplasty and bypass surgery in patients with multivessel and/or left main CAD.