Article

SYNTAX SCORE II VERSUS EUROSCORE II: IN CABG RISK STRATIFICATION

Alaa Omar MD, Hussein Derbala Msc , Mohamed Allam MD , Ehab el Shihy MD, Omar Dawoud MD

Department of Cardiothoracic Surgery Faculty of Medicine Cairo University, Cairo, Egypt
Corresponding Author: Email: alaaomarcts1@yahoo.com

ABSTRACT: Background: CABG had established as standard treatment of complex CAD. Prognostic models had adopted in medical guidelines and are used for assessment risks and guide therapy. We applied Syntax score (SS) II and Euro score (ES) II to patients undergoing CABG to evaluate their predictive performance of early mainly adverse cardiac and cerebrovascular event throughout thirty days.
Methods: In the period between April 2018 and September 2019, 300 patients with left main or/and Multivessel coronary artery disease underwent CABG at the Kasr AL Ainy hospitals.
Each of the used scores was subdivided into three subgroups: low, Medium and high "Risk". The primary end point was early mainly Adverse cardiac and cerebrovascular event throughout thirty days of CABG.
Results: Mean (SS) II is 25.99 with a range from 17 to 35 while the mean (ES) II was 1.33 with a range from 0.5 to 8. There was a statistically significant correlation between (SS) II subgroups with Mortality and Morbidity as well as (ES) II with (ES) II displaying more specifity and accuracy regarding short term Mortality and Morbidity.
Conclusion: (SS) II has a better discriminative ability but lesser specifity and accuracy than (ES) II.
Keywords: MACCE, SSII, ESII, CABG, PCI, MI, and EF

INTRODUCTION

Risk-stratification models for assessment post procedure mortalities and morbidities in coronary artery revascularization cases. Euro Score use for cardiac surgery cases, evaluating postoperative mortalities risks by integrating many clinical and procedural factors and popularities related to its simplicities, cardiac surgeries and percutaneous coronary interventions. Generally, Euro Score overestimates postoperative mortalities. Euro score II establish for inprove calibration than previous one.[1]And still contains without information regard to anatomy or extent of coronary artery diseases, and shortage in investigations which give more information about correlation between Euro score II and late results post coronary artery bypass grafting.[2]
Using SYNERGY among percutaneous interventions by TAXUS drug-eluting stents and cardiac surgery Score in Syntax experimentally and mainly using for preprocedural assessment for PCI cases. Syntax score using to evaluating coronary artery complexity and correlation in early and later term results post PCI; correlation among Syntax score and post CABG is unknown till now.
SS II develop to improve guide decisions among CABG and PCI Comparing to anatomical SS complex CAD cases. SS II combines anatomical SS by clinical variables which showed to alter threshold anatomical SS values where equipoise achieved among mortalities in either CABG or PCI.[3]

Aim of Work

Aim of Work is to evaluate the predictive performance of Syntax score (SS) II and Euro score (ES) II for early mainly adverse cardiac and cerebrovascular events throughout thirty days of CABG operation.

PATIENTS AND METHODS
Design:

Prospective observational comparative investigation conducted on 300 patients (222 male and 78 female) undergoing primary CABG for Left Main and/or Multivessel coronary artery disease at Kasr Al Ainy hospitals at the period between April 2018 and September 2019. Both Syntax score II and Euro score II were calculated for every patient. The patient's angiograms (coronary vasculature complexity) were scored according to the Syntaxscore II.

Inclusion criteria:
- Multi-vessel disease and (or) left main disease

Exclusion criteria:
- Associated with MR or another valve lesion.
- Redo-CABG and previous stenting.
- Previous cardiac surgery.

RESULTS

Table (1): Descriptive statistics of Mortality and Morbidity

	Number	Percent
Death		
No	282	94 %
Yes	18	6 %
MACCE		
No	255	85 %
Yes	45	15 %
Stroke		
No	288	96.0 %
Yes	12	4.0 %
MI		
No	285	95.0 %
Yes	15	5.0
RF		
No	288	96.0 %
Yes	12	4.0 %
AF		
No	240	80.0 %
Yes	60	20.0 %
Bleeding		
No	289	96.3 %
Yes	11	3.7 %
Mediastinitis		
No	291	97.0 %
Yes	9	3.0 %
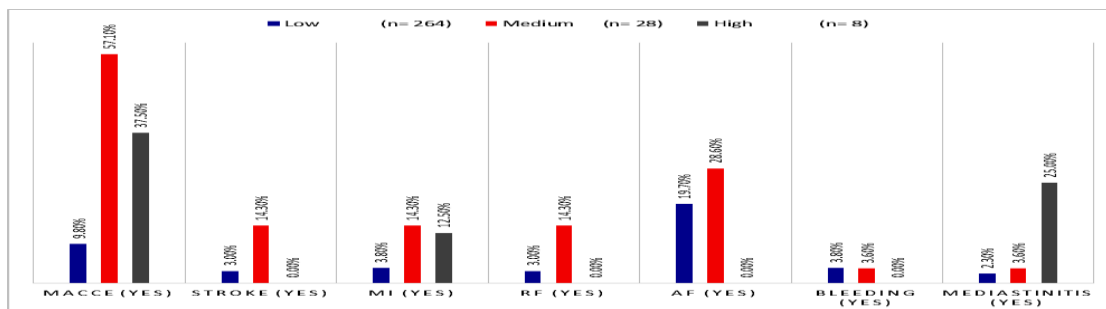
Figure (1): Bar chart representing the correlation between the different ES II sub groups and Morbidity.
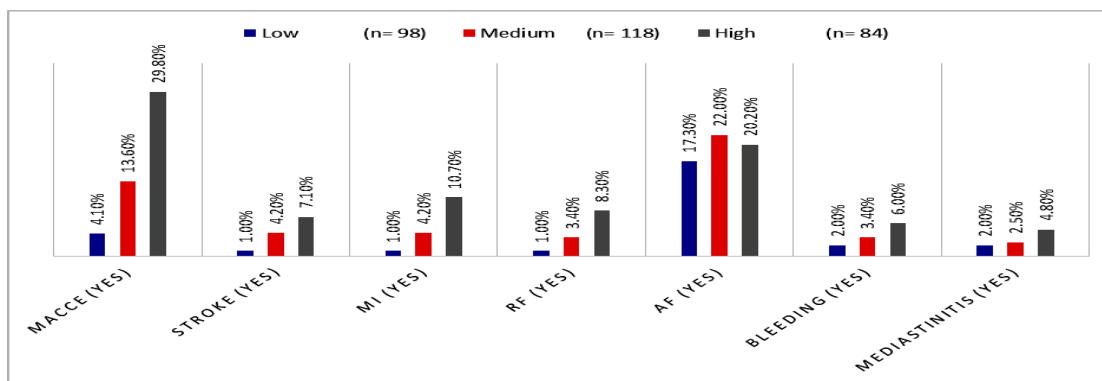
Figure (2): Bar chart representing the correlation between the different SS II sub groups and Morbidity.

Table (2): Specificity, accuracy of SS II and ES II

	SS II	ES II
Specificity	76.47%	93.73%
Negative predictive value (NPV)	91.1%	89.8%
Accuracy	73.3%	85.7%

DISCUSSION

In our study, Mortality was 6% (18 patients), MACCE was 15 % (45 patients), Stroke was 4% (12 patients), MI was 5% (15 patients), RF was 4% (12 patients), AF was 20% (60 patients), Bleeding was 3.71% (11 patients), Mediastinitis was 3% (9 patients).

Gonzales-Tamayo and colleagues [4] Short term Mortality was 3.4% which was lower than our study 6%. Biancari and colleagues[5] 30-day Mortality was 3.7% which is lower than our study. Incidence of Stroke was 2.4% which is lower than our study. Incidence of Perioperative MI was 12.4% which is higher than our study. Incidence of Mediastinitis, was 1.8% which is lower than our study. Incidence of Bleeding, was 5.6% which is higher than our study.

Omran and colleagues[6] Short term Mortality was 5% which is similar to our study. Bleeding incidence 5 % which is higher than our study. A 5% Incidence of perioperative MI (similar to our study). 10% Incidence of RF which is higher than our study. No patients developed Stroke. 20% patients developed Arrhythmias (Commonest was AF) similar to our results. 5% patients developed Deep wound Infection which is similar to our study.

Correlation of SS II and ES II with different variables:

In our study, there was a significant correlation between the different SS II subgroups and mortality (P value =0.017% significant) classified as follow: High risk group (10 out of 84 patients died) (11.9%), Medium risk group (6 out of 118 patients died) (5.1%) and Low risk group (2 out of 98 patients died) (2%).

There was a significant correlation between different ES II subgroups and mortality (P value =0.001% highly significant) classified as follow: High risk group (2 out of 8 patients died) (25%), Medium risk group (8 out of 28 patients died) (28.6%) and Low risk group (8 out of 264 patients died) (3%)

From this data we can conclude that both the ES II and SS II are reliable predictors of short-term mortality but the ES II have proven more accuracy 85.7% and specificity 93.7%.

In our study, SS II demonstrated a better discriminative abilities to separate (32.7 %) as low, (39.3%) as medium and (28%) as high-risk compared to ES II separating the low (88%), medium (9.3%), and the high-risk group (2.7%).

ES II (93.7%) displayed more specificity than SS II (76.4%) in predicting major adverse events.

ES II (85.7%) displayed more accuracy than SS II (73.3%) in predicting major adverse events.

Gonzales-Tamayo and colleagues[4] confirmed our study opinion about the SS II having the best discriminative ability. It separated the risk groups into low (54%), medium (27%), and high (17%) compared to ES II: low (93%), medium (4.5%), and high (1.5%).

Gonzales-Tamayo and colleagues[4] concluded that all scores including (SS II, ES II, and STS) reported short term mortality good performances, STS and ES II given improved for short term mortality (similar to

our study) while SS II is better at e long-term mortalities (four years or more) which is not in the scope of our study.

Omran and colleagues[6] reported that both ES II and SS II are accurate in the prediction of the outcome of CABG and the prediction of high-risk patient and more liable for detection of morbidity and mortality, however, ES II is more accurate which is similar to the result our study.

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