The cardiac complications while 16 103 patients (15.5%) had

The observed 30-day mortality was 10. 3 % which isconsidered to be higher than the averagemortality reported in previous studies 9. 3%, 9. 6% and6% (Curiel-Balsera et al. 2013, Junior et al.

2015, Exarchopoulos et al. 2015) respectively. this may be due to The higher rateof postoperative cardiac and respiratory complications. twenty seven/103 (26. 2%)of the study group had cardiac complications while 16/103 patients (15. 5%) hadrespiratory complications. A factor that was identified in this study as anindependent predictor of mortality after cardiac surgery, was the preoperativeplatelet count.

We found that the preoperative platelet count was higher in nonsurvivors {285. 40+67. 42 (103)} compared to survivors {232.

32+64. 41(103)}. Unal et al. 2013 reported that the mean plateletvolume (MPV) reflecting platelet production rate and activation and theplatelet count were moderately correlated with adverse events after CABGincluding ischemic vascular events, recurrent MI or death. The reported platelet count in their patients with adverseevents was 262 ± 66(103). The APACHE IIscore, calculated in the first day of ICU admission, was identified as anotherindependent predictor of postoperative mortality.

It has a good predictivepower for the 30-day mortality after cardiac surgery (AUC: 0. 868, p value <0. 001). Supporting our results Chang et al. 2017 studied 483patients after CABG and found that APACHE II score in the first ICU day waseffective in prediction of mortality (AUC: 0.

86, P value <0. 001). Other authorsdemonstrated that APACHE II score at ICU admission successfully predicted30-day mortality in 150 cardiac surgery patients (AUC: 0. 82, P value 0. 001) (Exarchopouloset al. 2015).

The most important difference between APACHE II scoreand other scores is that it is estimated during the first 24 hours of ICUadmission so it gives a snapshot of risk using data in the early time ofadmission but it still cannot guide clinical decision making reliably after theinitial ICU period and prediction could be inaccurate as postoperative events havenot occurred yet (Howitt et al. 2016). This canbe solved if APACHE II score have the ability to predict the risk daily.

In our study the maximum SOFA score in the first fourdays well predicted the 30-day mortality after cardiac surgery (AUC: 0. 878, Pvalue 0. 001). The daily SOFA score showed significant results in all days withthe 3rd day being the best (AUC: 0. 918, P value: 0. 001) in prediction ofmortality. this is in accordance with Patila et al. 2006 who calculatedthe SOFA for 857 cardiac surgery patients, the SOFA score in the first threedays showed good discrimination for mortality with the overall maximum SOFAscore being slightly better(AUC: 0.

76) and Ceriani et al. 2003 who calculatedSOFA score for the first 10 postoperative days in cardiac surgery patients, theworst score, the maximum score, the difference between the two values and thefirst day SOFA score. All the fourderivatives showed good discrimination with the worst daily score demonstratingthe best performance. A word of caution about SOFA score is that the cardiovascular componentof the SOFA score is

based on the administration of vasoactive medication usingspecific protocols such as dopamine being administered before noradrenaline totreat hypotension. In many centers, clinicians know that these patterns of drugadministration are not followed and this may lead to diminished confidence inthe SOFA score despite reports of good performance in multiple studies (Badreldin et al. 2012, Patila et al. 2006, Doerr et al.

2011, Exarchopoulos et al. 2015). Regarding CASUS score, the statistical analysis showedthat the maximum CASUS score was notsignificant as a predictor of 30-day mortality after cardiac surgery (AUC: 0. 673, P value: 0. 105). On the contrary to our results, the mean and maximum CASUS score were validated for prediction of 30-daymortality by Doerr at al.

2011 and performed well in the first 6postoperative days after cardiac surgery with maximum CASUS score (AUC: > 90) and Exarchopoulos et al. 2015 who found that CASUS score showed gooddiscrimination and calibration in the first postoperative day after cardiacsurgery with AUC 0. 89. The poor results of CASUS score in our studyin comparison to other studies may beattributed to the difference in patient populations as it lacks its application in different countries and it has not been tested inmulticenter studies and accordingly has not gained much popularity. Another reason is that CASUS score has some volatilevariables that may change from one hour to another such as lactate and pressureadjusted heart rate (PAR).

Comparing the three scoring systems regarding theirpredictive power of the 30-days mortality after cardiac surgery in this study, showed that APACHE II

score and SOFAscore (AUC: 0. 878) has a better ability to predict 30-day mortality than CASUSscore (AUC: 0. 673). Regarding prediction of morbidity, allscores showed significant results in predicting length of ICU stay andpostoperative hours of ventilation, on the contrary none of the scores showed correlationwith the length of hospital stay as shown in table (5). As shown in table (2) there isstatistically significant difference between survivors and non-survivorsregarding the value of SOFA (p: 0. 001) and APACHE II (p: 0. 001) scores. ROC curves were plotted showing that both APACHEII score(0.

878) and SOFA score (0. 878) have a good predictive power of 30-daymortality after cardiac surgery compared with the poor predictive power of the CASUSscore (0. 673) as shown in table (4). However, multivariate analysis identifiedAPACHE II score and preoperative platelets count as the independent predictorsof mortality after cardiac surgery in as shown in table (3). our study was conducted on 103 adult patientswith 30-day mortality 10. 3%, all patients preoperativecharacteristics are shown in table (1) showing that EF, platelets count, PO2and bilirubin level are predictors of mortality after cardiac surgery.

Mortality after cardiac surgery ranges from2. 94 to 32. 5% depending on type of surgery and different populations (Mehtaet al. 2002, Serigar et al. 2013, Chang et al. 2016). numerous risk scores weredeveloped for mortality prediction after cardiac surgery but still there are somemajor differences among these scores with regard to score design and theinitial population on which the score was developed (Geissler et al. 2000).

Postoperative risk scoring givesinformation of the postoperative situation, In addition to the preoperativepatient condition (Pätilä et al. 2006). Postoperative risk scoring systems such as the CardiacSurgery Score (CASUS), the Acute Physiology and Chronic Health Evaluation(APACHE II) and the Sequential Organ Failure Assessment (SOFA) score are used topredict mortality after cardiac surgery but they were not tested on our patientpopulation so we compared the accuracy of CASUS, APACHE II and SOFA scores inpredicting mortality after cardiac surgery in our centre. Patient and methods: Our prospective study comprised 103 adultpatients who underwent open heart surgery in the Cardiothoracic Surgery Department – TantaUniversity Hospitals from October 2015 to December 2017. Data on thepreoperative, intraoperative and postoperative status was recorded for eachpatient.

the postoperative patient data was recorded every hour and the worstdata was taken every 24 hours to calculate the postoperative scores. the APACHE2 score was calculated once in the first postoperative 24 hours, SOFA score wascalculated every 24 hours for maximum of 4 postoperative days, CASUS score wascalculated in the 2nd and 4th postoperative days. Clinical outcome was definedas postoperative morbidity and 30-day mortality.

Morbidity was expressed by: duration of ventilatory support, length of stay in the postoperativeICU and ward. For patients readmitted to the ICU, we considered only theinitial stay in the ICU. In cases of re intubation, we considered only theinitial period of mechanical ventilation. Statistical analysis: The collected data were organized, tabulated and statistically analyzed using SPSS version 19 (Statistical Packagefor Social Studies)

created by IBM, Illinois, Chicago, USA. For numericalvalues the range mean and standard deviations were calculated.

The differencesbetween two mean values were used using Mann-Whitney test as data were notfound to follow the normal distribution. For categorical variable the numberand percentage were calculated and differences between subcategories weretested by Monte Carlo exact test. The correlation between two variables wascalculated using Pearson’s correlation coefficient. Linear regression was usedfor multivariate analysis of numerical variables affecting survival. The ROCcurve was found to test predictability of survival by SOFA, CACUS and APACHE 2.

The level of significant was adopted at p <0. 05.