

Cardiovascular Assessment Before Kidney Transplantation

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Introduction

- Despite pre kidney transplant cardiovascular work-up being routine care to minimise perioperative risk; the utility of such risk assessment is not well established.

- We reviewed the evaluation and outcome of a standardised CV work-up incorporating risk stratification, dobutamine stress echocardiography (DSE) and coronary angiography (CA) according to the protocol in figure 1.

- Low Risk:** Age < 60

- High Risk:** Cardiac symptoms, Age > 60, Diabetes, Ischaemic Heart Disease, Congestive Cardiac Failure, Peripheral Vascular Disease

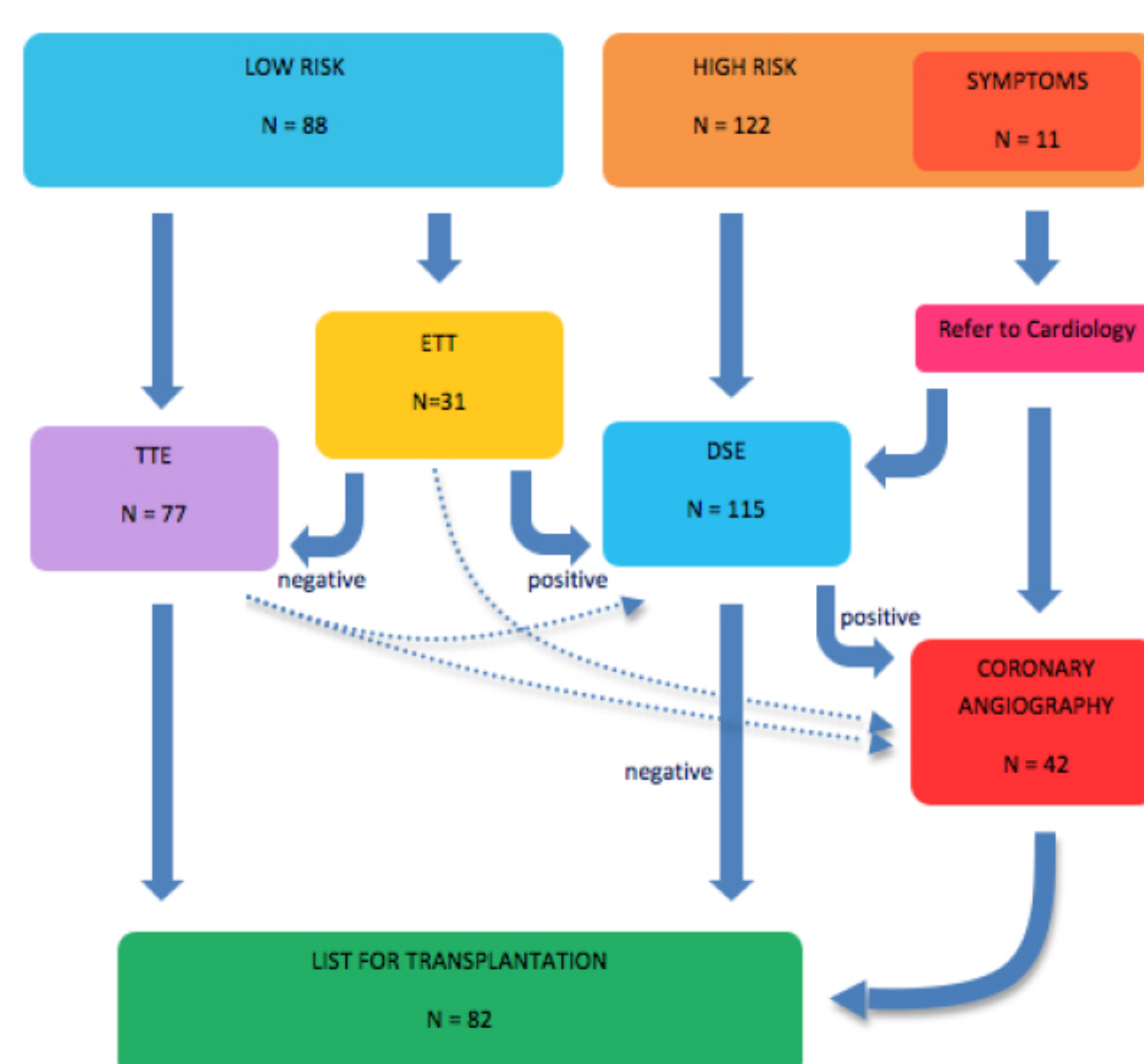


Figure 1: Protocol for CV work up before kidney transplantation. TTE, Transthoracic Echocardiography; ETT Exercise Tolerance Test

Methods

- We reviewed data on all patients referred for kidney transplant work-up between 1st February 2012 and 31st December 2014

- Events included Acute Coronary Syndrome, stroke, amputation, congestive cardiac failure & death

- DSE positive: $\geq 2/17$ segments of reversible ischaemia

- Significant coronary artery disease (CAD): >50% narrowing in any coronary artery

Results

Events

- 24 events in 21 patients during follow-up - none perioperative

- Overall annual event rate: 10.7%

- 9 deaths

Low Risk Group (n=88)

- 1 event – death from intracerebral haemorrhage

- 12 DSE for abnormal/suboptimal ETT or abnormal TTE

- 3 DSE positive → 2 of 3 had CA (1 pending) – none had CAD

High Risk Group (n=143)

- 23 events

- 8 deaths

Dobutamine Stress Echocardiography (n=115)

- 34 patients had a positive DSE and 30 went on to have CA

- 6 events in 34 patients with a positive DSE and 7 events in 81 patients with a negative DSE (Figure 2; p=0.193)

Coronary Angiography (n=42)

- 13 patients had at least 1 event

- 33 patients had evidence of CAD; 30 patients had significant CAD; 18 required intervention (i.e. PCI or CABG)

- 8 of 18 patients requiring intervention had events

- Patients not requiring intervention had significantly better event-free survival compared to those with significant CAD requiring coronary intervention (Figure 3; p=0.044)

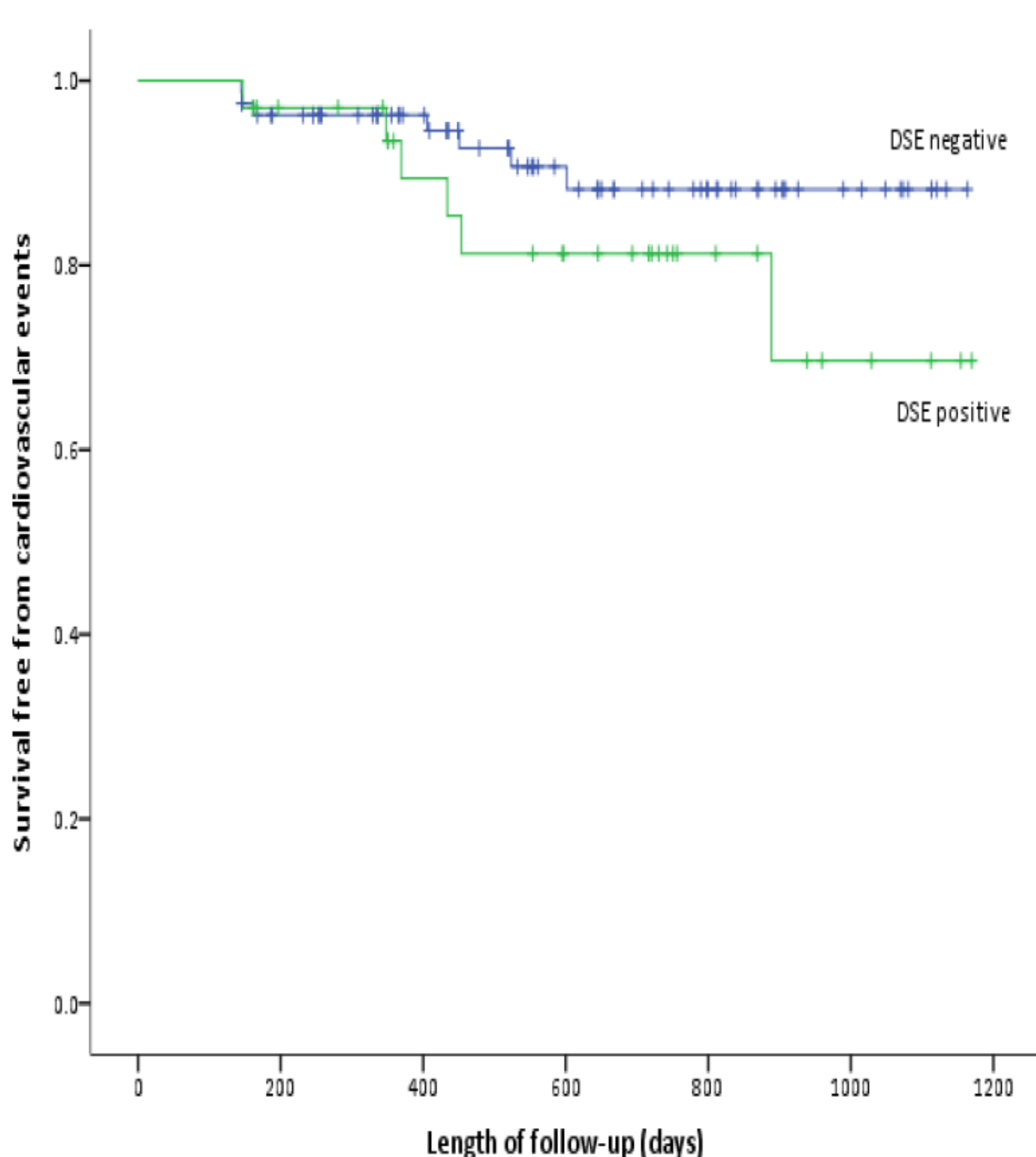


Figure 2: Event free survival in DSE negative and DSE positive patients (p=0.193)

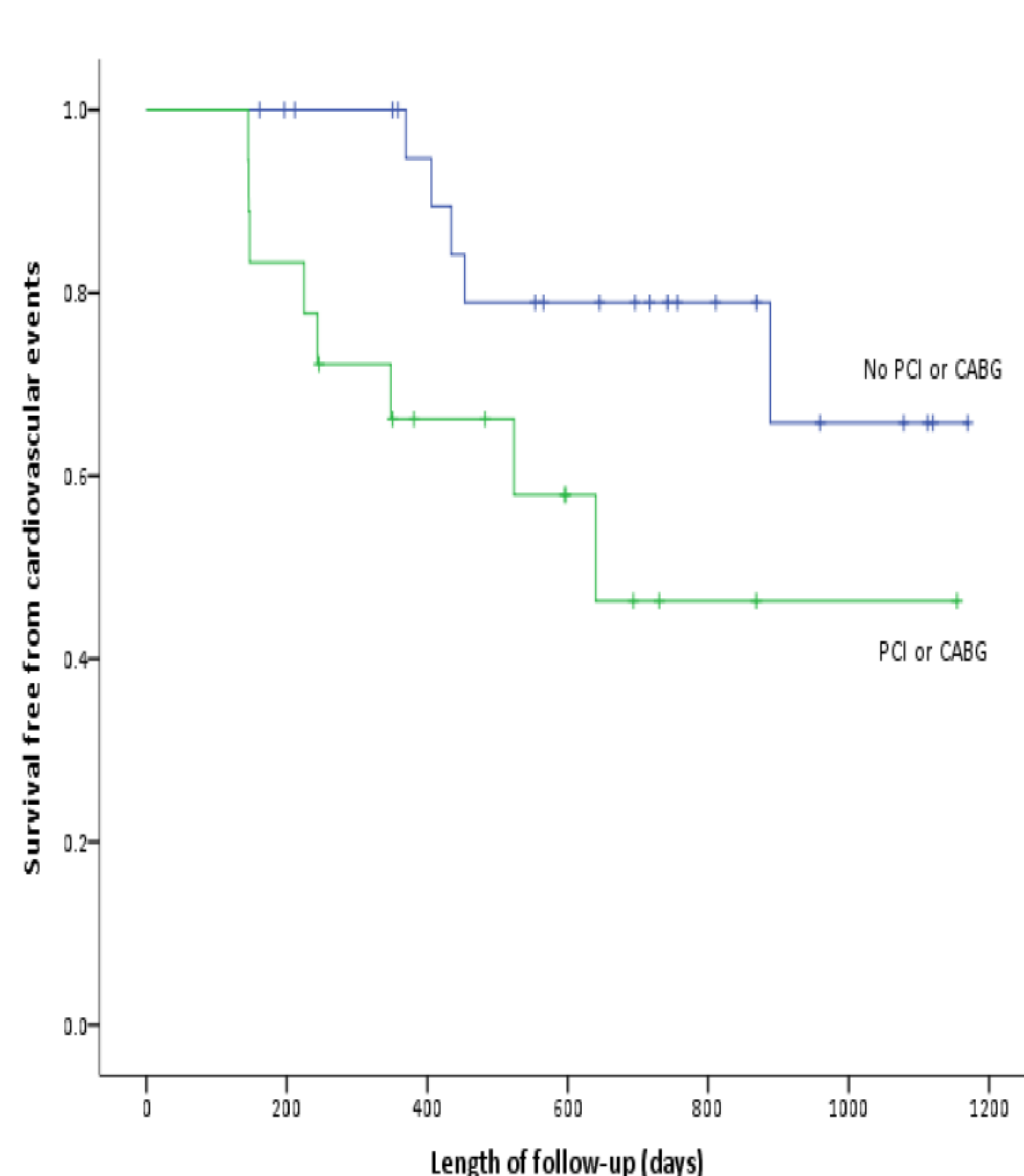


Figure 3: Event-free survival in patients having coronary angiography with and without significant coronary artery disease requiring PCI or CABG (p=0.044).

Summary & Conclusion

- Clinical risk stratification identified 143 (62%) potential renal transplant recipients as high risk

- Amongst the high-risk group, only 18 (12.6%) required coronary artery intervention or CABG

- There was significantly worse event-free survival in patients undergoing coronary artery intervention

- The annual event rate in the low-risk group was very low (0.7%) indicating that clinical risk stratification was an effective tool to avoid unnecessary testing in these patients

- 23 of 24 events were in patients belonging to the high-risk group

- 74% of cases with a positive DSE had CAD on CA suggesting a positive DSE was at least a fair predictor of CAD on CA.

- There was a non-significant trend towards worse event-free survival in patients with a positive DSE