

# **The Effect of the Metabolic Syndrome on Post Operative Recovery after Aortic Valve Replacement Surgery**

## **Aim**

The aim of this study was to determine whether the presence of metabolic syndrome affect the patients' length of stay post operatively.

## **Method**

A retrospective analysis of the cardiothoracic database was performed. Patients who underwent aortic valve replacement surgery from January 2013 to December 2014 were analysed. Patients with hypertension, hypercholesterolemia, diabetes, and increased BMI and waist circumference were identified. Metabolic syndrome is defined using the World Health Organisation Clinical Guidelines (Figure 1). The length of stay of patients with and without metabolic syndrome was compared. Statistical analysis was carried out using SPSS (v) 22 and a p value of less than 0.05 was considered significant.

## **Results**

Table 1 represents a summary of the demographics of the patients analysed. Between January 2013 to December 2014, 217 patients underwent aortic valve replacement surgery. Out of those, 30 patients (13.8%) had metabolic syndrome. The median post-operative length of stay in patients with metabolic syndrome and without metabolic syndrome was similar (9.00). The relationship between the presence of metabolic syndrome and length of hospital stay was not significant ( $p = 0.876$ ). However, the presence of dyslipidemia was associated with an increased post-operative hospital stay ( $p = 0.017$ ).

## **Conclusion**

The incidence of metabolic syndrome in patients with aortic valve disease is low. Similar duration of post operative length of stay was noted in patients with and without metabolic syndrome. However it was found that the presence of dyslipidaemia increases the length of stay of patients post operatively in patients who underwent aortic valve replacement surgery.

Risk factors	WHO [3]	NCEP ATP III [5,7]	IDF [8]
	DM/IFG or IGT or IR plus at least two risk factors	Any $\geq 3$ risk factors	Increased WC (ethnicity specific) plus at least two risk factors
Obesity	Waist-to-hip ratio $>0.90$ in men and $>0.85$ in women and/or BMI $>30$ kg/m <sup>2</sup>	WC $\geq 102$ cm in men or $\geq 88$ cm in women	WC criteria dependent on ethnicity
Triglycerides	$\geq 150$ mg/dl	$\geq 150$ mg/dl or drug treatment for elevated levels	$\geq 150$ mg/dl or drug treatment for elevated levels
HDL cholesterol	$<35$ mg/dl in men and $<39$ mg/dl in women	$<40$ mg/dl in men and $<50$ mg/dl in women or drug treatment for reduced levels	$<40$ mg/dl in men and $<50$ mg/dl in women or drug treatment for reduced levels
Blood pressure	$\geq 140/90$ mmHg	$\geq 130$ mmHg systolic or $\geq 85$ mmHg diastolic or drug treatment for hypertension	$\geq 130$ mmHg systolic or $\geq 85$ mmHg diastolic or drug treatment for hypertension
Fasting plasma glucose	IGT, IFG, or type 2 DM	$\geq 100$ mg/dl or drug treatment for DM	$\geq 100$ mg/dl or drug treatment for DM
Microalbuminuria	$>30$ mg albumin/g creatinine		

Definition of the metabolic syndrome according to different proposals. Adapted with permission [6\*\*]. Criteria for the diagnosis of diabetes mellitus (DM) (each must be confirmed on a subsequent day): symptoms of DM plus casual plasma glucose level greater than 199 mg/dl or fasting plasma glucose level greater than 125 mg/dl or 2 h plasma glucose level after 75 g glucose load greater than 199 mg/dl. NCEP ATP III, National Cholesterol Education Program Adult Treatment Panel III; IDF, International Diabetes Federation; IFG, impaired fasting glucose (fasting plasma glucose level, 100–125 mg/dl); IGT, impaired glucose tolerance (2 h plasma glucose level after 75 g glucose load, 140–199 mg/dl); IR, insulin resistance; WC, waist circumference.

Figure 1: Definition of Metabolic Syndrome, adapted from the World Health Organisation

Table 1:

Total number of patients	217
Male	147 (67.2%)
Mean Age/ years	68.4 ( Std Dev 13.2)
Hypertension	153 (70.5%)
Dyslipidaemia	162 (74.7%)
Diabetes Mellitus	66 (30.4%)
Diet controlled	11 (5.1%)
Oral Therapy	32 (14.7%)
Insulin Therapy	23 (10.6%)
Mean BMI /kg/m <sup>2</sup>	28.74
Presence of Metabolic Syndrome	30 (13.8%)
Mean LOS (all patients)	12.8 (Std Dev 23.3)
Mean LOS – Metabolic syndrome	10.2 (Std Dev 5.6)
Mean LOS (non MS)	13.2 (Std Dev 25.0)
Median LOS – Metabolic syndrome	9
Median LOS (non MS)	9