OP-173

Carotid Artery Back Pressure and Cerebral Intolerance During the Occlusion in Carotid Stenting with the Mo.Ma Proximal Embolic Protection Device

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Introduction: The Mo.Ma proximal embolic protection system provide neuroprotection during all phases of the carotid artery stenting (CAS) procedure. However, cerebral intolerance is not an infrequent occurrence with this approach. In most of the cases, intolerance is a benign phenomenon which resolves quickly. However, in some cases, the symptoms may persist and this requires further action. There is no much information about relationship between procedural cerebral intolerance and carotid back pressure during the occlusion. Here, we report our experience about this relationship in 25 patients undergoing CAS with the Mo.Ma device.
Method: During the procedure, cerebral protection was achieved by means of balloon occlusion of the common and external carotid artery with a Mo.Ma System. The patients' neurologic status was assessed during the intervention. The blood pressure at the carotid bifurcation was measured before the onset of carotid balloon occlusion. Afterwards, carotid back pressures at the carotid bifurcation were measured immediately after the occlusion of carotid balloon and immediately before the deflation of carotid balloon during the procedure.
Results: The procedure was technically successful in all cases. No strokes, deaths, or myocardial infarctions occurred. The average duration of carotid occlusion was 8.2 minutes. The blood pressure measured in the carotid artery was on average 130±27 mm Hg before the onset of carotid balloon occlusion. Carotid artery back pressure was 53±15 mm Hg immediately after occlusion of the carotid balloon. Of the 25 patients, 4 patients (16%) experienced cerebral intolerance. The patients with cerebral intolerance demonstrated back pressures of 20, 25 and 21and 20 mmHg, respectively. Mean carotid artery back pressure was 21.5±2 mmHg in these patients during the occlusion and back pressures continued to fall at the end of occlusion (18±5 mmHg) (immediately before the deflation of carotid balloon). However, in the patients without cerebral intolerance, mean carotid back pressure was 53±15 mm Hg and back pressure did not change significantly at the end of occlusion (immediately before the deflation of carotid balloon). As expected, the carotid back pressure was under 30 mmHg in the patients developing symptoms during the occlusion. However, 4 asymptomatic patients had also a distal back pressure under 30 mmHg during the occlusion.
Conclusion: One of the most important concerns with the use of Mo.Ma proximal embolic protection device is possible cerebral intolerance. This usually consists to transient neurological symptoms which may occur during the proximal occlusion. In the patients undergoing CAS with the Mo.Ma system, a commonly held notion is that back pressure of <30 mm Hg cause symptoms of cerebral intolerance during the occlusion. However, our study showed that a low carotid back pressure of <30 mm Hg may not always result in symptoms of intolerance during occlusion.

OP-174

Efficacy and Safety of Percutaneous Suture-Mediated Closure Devices in Interventional Cardiology: Outcomes of the Largest Series of Percutaneous Vascular Closure in Turkey

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Introduction: Closure devices are well established as an alternate to mechanical compression or surgical closure after some percutaneous intervention. The single ProGlide, the Prostar device and the double ProGlide devices can be used for 5F to 8F, 8.5F-24F and 9F-21F access sites, respectively. The potential for adverse outcomes is greater with an increased-diameter femoral access sheath, given the increase risk of hemorrhage in the event of device failure. We evaluated the incidence and types of complications encountered with use of percutaneous suture-mediated closure devices (ProGlide and Prostar) in conjunction with the preclose technique to seal puncture sites after some percutaneous interventions.
Methods: In this single center retrospective study, our medical records were reviewed for the patients having access site closures with the single Perclose ProGlide, double Proglide and Prostar devices performed in conjunction with some percutaneous interventions (TAVI, balloon aortic valvuloplasty, carotid stenting, renal stenting, renal denervation, and coronary interventions). Procedure success was defined as hemostasis with the preclose technique without the need for any ancillary procedure. Access-related major adverse events included perforation, bleeding, lower leg ischemia, pseudoaneurysm, arteriovenous fistula, hematoma, embolization, laceration, femoral artery thrombosis, nerve injury, infection, or death owing to an access site injury.
Results: We identified 251 consecutive patients, between June 2011 and June 2013 in whom single Proglide, double Proglides and Prostar closure devices were used during 98 peripheral vascular interventions (renal, carotid), 53 coronary interventions, 46 TAVI procedure and 7 aortic balloon valvuloplasty procedures. In the single Proglide, double Proglide and Prostar closure devices, procedure success were achieved in 167 (98.8%) of 169 patients, in 49 (94.2%) of 52 patients and in 1 (96,6%) of 30 femoral sites, respectively. In the single Proglide group (n=169), there were only 2 device failures managed with manual compression. Minor complications included two groin hematomas and two cases of persistent pain at the arteriotomy site. In the double Proglides group, there were three device failures treated with surgical closure or Prostar (n=1). Minor complications included two groin hematomas and two cases of persistent pain at the arteriotomy site. In the Prostar group, there were one device failure treated with surgical closure and, two minor complications included two cases of persistent pain at the puncture site.
Conclusion: In our study, vascular complications were considerably low in the three groups. We have also found the double ProGlide technique to be easy to use, safe,and feasible for access sites ≥9F.

Valvular Heart Diseases

Tuesday, October 29, 2013, 10:15 AM–11:30 AM
Hall: SARAJEVO

Abstract nos: 175-180

OP-175

A Novel Indicator for Assessment of Mitral Regurgitation Severity: Pro-Adrenomedullin

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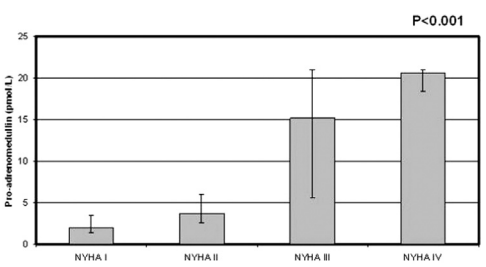
Background: In some patients, including elderly, physically inactive or obese patients, it is difficult to assess the symptoms because of inactivity in patients with chronic mitral regurgitation. A noninvasive marker that shows early changes in the cardiovascular system would therefore be helpful in evaluating patients with MR. The aim of this study was to evaluate the association between plasma pro-adrenomedullin levels and MR and its prognostic value as indicator of cardiovascular prognosis in patients with moderate/severe MR.
Methods: A total of 221 consecutive patients (129 women [58.4%]; mean age 61.6±12.5 years) with isolated and organic moderate MR, moderate to severe MR or severe MR were included in the study. Patients were categorized according to the NYHA functional class. We assessed and graded the severity of MR using a multiparametric approach. Pro-adrenomedullin was measured with ELISA method. Patients were followed-up by outpatient assessments and telephone contact.
Results: Baseline demographic and clinical characteristics of the study population are listed in Table 1. Echocardiographic and laboratory parameters of patients with mitral regurgitation and comparison between asymptomatic and symptomatic patients are listed Table 2. Pro-adrenomedullin was significantly higher among symptomatic MR patients when compared with asymptomatic patients (p<0.001). Median pro-adrenomedullin levels increased significantly with NYHA class (p<0.001, Figure 1) and with higher degrees of MR (p<0.001, Figure 2). Increased levels of serum creatinine, pro-adrenomedullin level, male gender, reduced LVEF, and higher NYHA functional classes were significantly associated with an increased risk of death during follow-up. In multivariate analysis, LVEF and NYHA class were the only independent predictors of death (Table 3).
Conclusion: Pro-adrenomedullin levels can help to identify patients with asymptomatic moderate/severe mitral regurgitation from the symptomatic ones. This may be useful in the optimal timing of mitral valve surgery in certain subset of patients.



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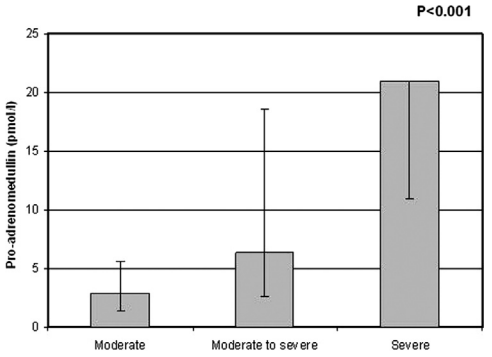

Table 1. Demographic and clinical characteristics of patients with mitral regurgitation and comparison between asymptomatic and symptomatic patients

	All patients (n=221)	Asymptomatic (n=62)	Symptomatic (n=159)	P Value
Mean age, years	61.6±12.5	52.5±12.5	65.2±10.7	**<0.001**
Female, n (%)/ Male, n (%)	129 (58.4)/ 92 (41.6)	47 (75.8)/ 15 (24.2)	82 (51.6)/ 77 (48.4)	**0.001**
Hypertension, n (%)	158 (71.5)	32(51.6)	126(79.2)	**<0.001**
Cigarette smoker, n (%)	29 (13.1)	10 (16.1)	19 (11.9)	0.506
Diabetes Mellitus, n (%)	38 (17.2)	7 (11.3)	31 (19.5)	0.102
BMI (kg/m2)	29.8±6.0	28.9±3.6	30.2±6.7	0.132
BMI ?30 kg/m2, n (%)	86 (39.4)	18 (29)	68 (43.6)	0.065
NYHA Class				
I	62 (28.19	62 (100)	-	
II	87 (39.4)	-	87 (54.7)	
III	54 (24.4)	-	54 (34)	
IV	18 (8.1)	-	18 (11.3)	
Atrial Fibrillation, n (%)	108 (49.5)	23 (37.1)	85 (53.5)	**0.024**
Lower-extremity edema, n (%)	91 (41.2)	6 (9.7)	85 (53.5)	**<0.001**
Medication				
Beta blockers, n(%)	115 (52.8)	26 (41.9)	89 (57.1)	0.510
ACEI/ARBs, n(%)	168 (77.1)	41 (66.1)	127 (81.4)	**0.020**
Diuretics, n(%)	102 (46.8)	15 (24.2)	87 (55.8)	**<0.001**
CCB, n(%)	16 (7.3)	6 (9.7)	10 (6.4)	0.399
Digoxin, n(%)	33 (15.1)	6 (9.7)	27 (17.3)	0.209
Baseline hemodynamics				
Systolic BP, mmHg	127.9±20.7	124.6±16.6	129.1±21.9	0.809
Diastolic BP, mmHg	78.2±19.2	77.9±7.1	78.3±10.0	0.169
Heart rate, beats/min	80.9±19.2	72.5±13.0	84.3±19.7	**<0.001**

ACEI, Angiotensin-converting enzyme inhibitor; ARB, Angiotensin receptor blocker; BP, Blood pressure; BMI, body mass index; CCB, Calcium channel blockers; NYHA, The New York Heart Association. Values are mean ± SD (range) or n (%).

Table 2. Echocardiographic and laboratory parameters of patients with mitral regurgitation and comparison between asymptomatic and symptomatic patients

	All patients (n=221)	Asymptomatic (n=62)	Symptomatic (n=159)	P Value
Echocardiographic findings				
LVEDD (mm)	51.4±6.3	49.6±3.9	52.1±6.9	**0.008**
LVESD (mm)	36.2±7.3	33.5±6.1	37.2±7.5	**0.001**
LA (mm)	43.8±5.0	42.0±5.0	44.5±4.9	**0.001**
Ejection fraction (%)	54.1±11.5	61.3±7.6	51.4±11.5	**<0.001**
PAP (mm Hg)	36.5±9.5	33.8±6.9	37.6±10.2	**0.008**
Mitral regurgitation severity				**<0.001**
Moderate	118 (53.4)	59 (95.2)	59 (37.1)	
Moderate to severe	62 (28.05)	3 (4.8)	59 (37.1)	
Severe	41 (18.55)	-	41 (25.8)	
Laboratory findings				
Hemoglobin (g/dl)	12.7±1.2	13.0±0.9	12.6±1.3	**0.031**
BUN (mg/dl)	18.8±7.7	17.8±6.5	19.3±8.1	0.192
Serum creatinine (mg/dl)	0.92±0.3	0.87±0.3	0.94±0.3	0.084
Fasting glucose (mg/dl)	113.2±42.4	96.7±13.6	119.8±47.8	**<0.001**
FT3 (pg/ml)	2.88±0.73	2.75±0.72	2.94±0.74	0.147
FT4 (ng/dl)	1.28±0.29	1.27±0.18	1.29±0.33	0.654
TSH (µIU/ml)	1.55±2.50	1.77±1.50	1.46±2.48	0.423
Total cholesterol (mg/dl)	186.6±41.6	211.3±45.1	175.8±35.1	**<0.001**
HDL (mg/dl)	47.7±12.9	50.3±10.8	46.6±13.5	0.065
LDL (mg/dl)	107.4±33.6	127.4±36.8	98.5±28.0	**<0.001**
Triglyceride (mg/dl)	144.2±59.2	141.3±47.8	145.5±63.9	0.646
Calcium (mmol/l)	9.29±0.72	9.31±0.46	9.2±0.80	0.839
Potassium (mmol/l)	4.5±0.5	4.39±0.37	4.53±0.48	**0.048**
Sodium (mmol/l)	140.1±3.0	140.0±2.1	140.1±3.3	0.902
Pro-adrenomedullin (pmol/l)	7.50±7.15	3.54±3.51	9.04±7.62	**<0.001**

FT3, free triiodothyronine; FT4, free thyroxine; Hs-CRP, high-sensitivity C-reactive protein; PAP:Pulmonary artery pressure; LA, left atrial diameter; LVEDD, left ventricular end-diastolic diameter; LVESD, left ventricular end-systolic diameter; TSH, thyroid-stimulating hormone. Values are mean ± SD (range) or n (%).

Table 3. Results of univariate and multivariate Cox proportional hazard analysis for all-cause mortality at 12 months for the patients with mitral regurgitation.

	Univariate analysis			Multivariate analysis		
Variable	**HR**	**95% CI**	**P value**	**HR**	**95% CI**	**P value**
Gender	0.208	0.057–0.757	0.017	0.631	0.27–5.565	0.681
NYHA Class			<0.001			<0.001
NYHA I vs II	0.795	0.152–4.271	0.823	0.448	0.060–3.378	0.665
NYHA I vs III	4.235	1.480–13.84	0.026	2.374	0.449–12.54	0.157
NYHA I vs IV	32.87	4.938–82.40	<0.001	41.56	4.524–183.5	0.026
Serum creatinine	10.865	3.052–38.684	<0.001	2.715	0.153–17.89	0.618
Pro-adrenomedullin	1.168	1.079–1.264	<0.001	1.062	0.975–1.157	0.169
Ejection fraction	0.869	0.812–0.929	<0.001	0.891	0.807–0.984	0.023

NYHA, The New York Heart Association

OP-176

Neutrophil / Lymphocyte Ratio is Associated with Severity of Obstruction in Patients with Prosthetic Valve Thrombosis

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Background: There is an established relation between neutrophil/lymphocyte ratio (NLR) and adverse outcomes in patients with cardiovascular diseases. Recently, small studies have shown that NLR is independently associated with spontaneous echo contrast in patients with mitral stenosis. In this study, we aimed to investigate the role of NLR in patients with functional and thrombotic prosthetic mitral valve.
Method: 214 subjects with prosthetic valves were analyzed retrospectively in this comparative monocentric study. The patients with prosthetic valve thrombosis (PVT) were further classified as obstructive versus nonobstructive (group 1 and group 2). The control group (group 3) included the patients with functional mitral prosthesis. Two dimensional and real-time 3 dimensional transesophageal echocardiography were performed to confirm or to exclude the presence of thrombus. Doppler study was performed for assessment of valvular obstruction. NLR was calculated using data obtained from the complete blood count and taken at the time of admission before the administration of any fibrinolytic therapy. The exclusion criteria included treatment with fibrinolytics in the previous 24 h, active infection, past history of a systemic inflammatory process, malignancy, end-stage liver disease and renal failure.
Results: The groups were composed of 100, 51 and 63 patients, respectively. Mean age was 49± 13 years. There was no significant difference between age and sex among the 3 groups. The mean transvalvular gradients were 12.4±2.4 mmHg, 4.1±1.1mmHg, 3.9±0.9mmHg, respectively ($p<0.001$). The mean thrombus area was 0.9±0.3 cm2, (range;0.4-1.8 cm2) in group 1 and 1.7±1.1cm2, (range between 0.8-6 cm2) in group 2 ($p=0.032$). With respect to NLR, it differed significantly across tertiles (3.9± 1.9, 2.7±1.4, 2.8±1.4, $p<0.001$) and group 1 had significantly higher NLR compared to group 2 and 3. There was a very strong correlation between the mean transvalvular gradient and NLR ($r=0.865$; $p<0.001$). Furthermore there was a strong correlation between the mean thrombus area and NLR ($r=0.685$; $p<0.001$). In this study, a NLR level of >2.7, measured upon admission, had 72% sensitivity and 60% specificity in predicting the development of obstructive PVT.
Conclusions: In this large-scaled study we showed that NLR, a novel biomarker, was associated with severity of obstruction in patients with PVT and it could inform the clinician about the total thrombus burden.

Congestive Heart Failure

OP-177

Echocardiographic Determinants of Right Ventricular Systolic Dysfunction in Non-Ischemic Dilated Cardiomyopathy: Relation to Functional Status and Plasma BNP Levels

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Aim: Right ventricular (RV) functions are well-known to play an important role in prognosis of patients with non-ischemic dilated cardiomyopathy (NICMP) similar to all forms of heart failure. We investigated the echocardiographic determinants of RV systolic dysfunction in patients with NICMP.
Methods: Seventy-nine patients with angiographically normal coronary arteries (mean age: 50.5+12, mean EF: 31+4%) were enrolled in this study. Patients were divided into two groups according to their right ventricular (RV) systolic function determined by tissue Doppler systolic velocities (RV-Sm) as: Group A (RV-Sm >10 cm/s, n=48) and Group B (RV-Sm <10 cm/s, n=31).