Abstract: P2688

A novel risk factor of stent restenosis after drug-eluting stent implantation; Involvement of triglyceride deposit cardiomyovascularopathy, coronary atherosclerosis with triglyceride deposition

Authors:
Y Nakano¹, M Suzuki¹, K Waseda², T Niwa¹, H Ando¹, S Sakurai¹, M Shimoda¹, H Ohashi¹, H Takashima¹, T Amano¹, ¹Aichi Medical University - Nagakute - Japan, ²Narita Memorial Hospital, Cardiology - Toyohashi - Japan,

Topic(s):
Coronary Artery Disease – Epidemiology, Prognosis, Outcome

Citation:
Background: Triglyceride deposit cardiomyovascularopathy (TGCV) is a novel disease concept characterized by the excessive accumulation of triglyceride in cardiomyocytes and vascular smooth muscle cells, leading to coronary artery disease (CAD), heart failure, and arrhythmia. However, it is rarely known whether TGCV contributes to the increased risk of vascular failure after drug eluting stent (DES) implantation.

Purpose: The aim of this study was to evaluate vascular failure after 2nd generation DES implantation in patients with TGCV.

Methods: Among 637 consecutive patients suspected of having CAD who underwent both coronary angiography and iodine-123-ß-methylidophenyl-pentadecanoic acid (BMIPP) scintigraphy between 2010 and 2018, we analyzed the data from 92 patients who met the inclusion criteria (shown in Table and Figure). Ninety-two patients were allocated to the presence (TGCV group, 11 patients) or absence (control group, 81 patients) of TGCV. All of 92 patients were implanted 2nd generation DES and underwent planned follow up coronary angiography. Control patients were diagnosed of diabetes mellitus. Binary restenosis (ISR), defined as angiographic luminal diameter =50% by quantitative coronary angiography, target lesion revascularization (TLR), In-stent late loss and restenosis morphology were assessed in 23 stents of TGCV group and 120 stents of control group.

Results: There were no significant differences in baseline characteristics between the two groups except for the prevalence of hypertension. In-stent late loss was greater in TGCV than in control (0.45 (-0.04-3.33) vs. 0.15 (-0.18-2.75), p=0.00007), resulting in greater incidence of ISR and TLR in TGCV than in control (34.8% vs. 10.0%, p=0.0017; 21.7% vs. 6.7%, p=0.021, respectively). On multivariable logistic regression analysis, TGCV was found to be a significant and independent predictor for ISR after 2nd generation DES implantation. Regarding restenosis morphology, diffuse and occlusive pattern of ISR, were more frequently observed in TGCV than control (87.5% and 33.3%, Fisher's exact test p=0.028).

Conclusion: Patients with TGCV showed the greater incidence of vascular failure even after 2nd generation DES implantation, contributing to the novel risk factor for coronary intervention even in the 2nd DES era.

<table>
<thead>
<tr>
<th>Items</th>
<th>Clinical findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 points</td>
<td></td>
</tr>
<tr>
<td>I)</td>
<td>BMIPP scintigraphy Wash-Out Rare &lt;10%</td>
</tr>
<tr>
<td>II)</td>
<td>Diffuse narrowing coronary arteries</td>
</tr>
<tr>
<td>1 point</td>
<td></td>
</tr>
<tr>
<td>III)</td>
<td>Jordans anomaly in peripheral blood smear</td>
</tr>
<tr>
<td>IV)</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Decision</td>
<td>4 points or more → Definite TGCV</td>
</tr>
</tbody>
</table>
A novel risk factor of stent restenosis after drug-eluting stent implantation: Involvement of triglyceride deposit cardiomyovasculopathy, coronary atherosclerosis with triglyceride deposition

Authors: Y Nakano 1, M Suzuki 1, K Waseda 1, T Niwa 2, H Ando 1, S Sakurai 1, M Shimoda 1, H Ohashi 1, H Takashima 1, T Amano 1, 1 Aichi Medical University - Nagakute - Japan, 2 Narita Memorial Hospital, Cardiology - Toyohashi - Japan

Background: Triglyceride deposit cardiomyovasculopathy (TGCV) is a novel disease concept characterized by the excessive accumulation of triglyceride in cardiomyocytes and vascular smooth muscle cells, leading to coronary artery disease, heart failure, and arrhythmia. However, it is rarely known whether TGCV contributes to the increased risk of vascular failure after drug eluting stent (DES) implantation.

Purpose: The aim of this study was to evaluate vascular failure after 2nd generation DES implantation in patients with TGCV.

Methods: Among 637 consecutive patients suspected of having CAD who underwent both coronary angiography and iodine-123-ß-methyliodophenylpentadecanoic acid (BMIPP) scintigraphy between 2010 and 2018, we analyzed the data from 92 patients who met the inclusion criteria (shown in Table and Figure). Ninety-two patients were allocated to the presence (TGCV group, 11 patients) or absence (control group, 81 patients) of TGCV. All of 92 patients were implanted 2nd generation DES and underwent planned follow up coronary angiography. Control patients were diagnosed of diabetes mellitus.

Binary restenosis (ISR), defined as angiographic luminal diameter =50% by quantitative coronary angiography, target lesion revascularization (TLR), In-stent late loss and restenosis morphology were assessed in 23 stents of TGCV group and 120 stents of control group.

Results: There were no significant differences in baseline characteristics between the two groups except for the prevalence of hypertension. In-stent late loss was greater in TGCV than in control (0.45 (­0.04­3.33) vs. 0.15 (­0.18­2.75), p=0.00007), resulting in greater incidence of ISR and TLR in TGCV than in control (34.8% vs. 10.0%, p=0.0017; 21.7% vs. 6.7%, p=0.021, respectively). On multivariable logistic regression analysis, TGCV was found to be a significant and independent predictor for ISR after 2nd generation DES implantation.

Regarding restenosis morphology, diffuse and occlusive pattern of ISR, were more frequently observed in TGCV than control (87.5% and 33.3%, Fisher’s exact test p=0.028).

Conclusion: Patients with TGCV showed the greater incidence of vascular failure even after 2nd generation DES implantation, contributing to the novel risk factor for coronary intervention even in the 2nd DES era.

The 4th edition diagnostic criteria for TGCV