Conclusions: Our data demonstrates that PTs with STEMI and a CTO have higher in-hospital, 30 day, and one year mortalities than STEMI PTs without a CTO. PTs with NSTEACS and a CTO have higher in-hospital and 30 day mortality than NSTEACS PTs without a CTO, and there is a non-significant trend towards increased one year mortality for PTs with a CTO. Strategies to reduce this increased mortality are needed.

TCT-371
Impact of Chronic Total Occlusions on Mortality in Patients Presenting With Cardiac Arrest
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Background: Cardiac arrest (CA) is often the result of both acute and chronic coronary artery disease (CAD) particularly when it is caused by ventricular tachyarrhythmia (VT/VF). Therapeutic hypothermia has been shown to decrease mortality and after resuscitated CA (rCA). It has been demonstrated that a chronic total occlusion (CTO) has been established with improved success rates. During the procedure of percutaneous coronary intervention (PCI) for CTO lesions in the retrograde approach, electrocardiographic R-wave amplitudes often decrease in many leads. Because the differential diagnoses of low voltages on electrocardiogram (ECG) include pericardial effusion, the presence of these changes should increase the index of suspicion for a significant pericardial effusion due to coronary perforation and prompt further evaluation such as echocardiography.

Methods: We analyzed the recent 30 patients (group-R, age 65±12) who underwent successful PCI for CTO lesions in the retrograde approach and the recent 30 patients (group-D, age 60±10) who underwent treatment for pericardial effusion during catheter intervention. Group-R was divided into 2 groups according to whether removing drainage of effusion (group-R/D(+), n=15) or not (group-R/D(-), n=15). Pre-ECG was defined as the ECG just before the catheter intervention. Post-ECG was defined as the ECG just before the procedure of drainage for Group-E/D(+), and the ECG immediately after catheter intervention for other groups.

Results: In comparison of pre-ECG and post-ECG, the leads in which R-wave amplitude significantly decreased were I, II, AVL, V1, V4, V5, and V6 in group-R; I, II, AVL, V4, V5, and V6 in group-E/D(+); but only AVL in group-E/D(-). Heart rate (HR) significantly increased in group-E/D(+)/(64±12 to 83±18, p=0.0034) between the 2 ECGs, but not in group-R and group-E/D(-).

Conclusions: Our data demonstrates that CTA Ps presenting with VT/VF and who have a CTO appear to have similar mortality compared to those without a CTO. Ps with and without a CTO who presented with RCA and STEMI have similar mortality although there is a trend in favor of those without a CTO. STEMI Ps with RCA have a higher incidence of a CTO than do STEMI Ps without RCA. Further efforts to understand, treat, and avoid CA in Ps with a CTO are warranted.

TCT-372
“All metal jacket” (stented length > or = 50 mm) using drug-eluting stents for chronic total occlusive lesions.
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Background: Limited data exists on patients who have undergone drug eluting stent (DES) implantation of long chronic total occlusive (CTO) lesion in native coronary arteries. Methods: We defined long continuous stent implantation (stent length > or = 50mm) as “full metal jacket” (FMJ). From April 2007 to March 2013, 344 consecutive patients (361 lesions) who underwent FMJ using any DESs for de novo lesion were enrolled. Subjects were classified into two groups: the patients with CTO lesion (CTO group, 113 patients, 114 lesions) and without CTO lesion (non-CTO group, 239 patients, 247 lesions). The two groups were compared for mean 24±19 months clinical endpoints. Outcomes were freedom from target lesion revascularization (TLR) and major adverse cardiovascular events (MACE) defined as composite of TLR, myocardial infarction and all cause death at 5 years after percutaneous coronary intervention procedure. Results: CTO group was younger than non-CTO group (60±10.9 years vs 70±10.0±6.0 years). The percentage of male gender and hyperlipidemia were higher in CTO group than non-CTO group (84.2% vs. 69.6%, p<0.05 and 58.8% vs. 47.0%, p<0.05 respectively). There were no significant differences between both study arms in percentages of diabetes mellitus (43.0% vs 48.6%, p=0.32), hypertension (71.9% vs 75.2%, p=0.5), hyperlipidemia (2.6% vs. 5.3%, p=0.26) and current smoker (19.3% vs 17.1%, p=0.7). Target vessel was more often the right coronary artery in CTO group than non-CTO group (71.1% vs. 33.2%, p<0.05). The mean lesion length of implanted stents was longer in CTO group (72±8.1±4 mm vs 60.9±9.0 mm, p<0.05). Intravascular ultrasound was used in 70.0% and follow up rate of angiography was 75.9%. Regarding the long-term clinical outcomes, there were no significant differences in the rate of freedom from TLR (60.5±10.5% vs. 76.9±3.7%, Log rank p=0.468 and MACCE [All CV death+MI+MACE] 3.8±3.9% vs 6.7±2.9%, p=0.29, Log rank p=0.880) at 5 years estimated using the Kaplan-Meier methods compared to non-CTO group. Conclusions: The strategy of FMJ using DES was acceptable for CTO lesions.

TCT-373
Decreasing R-Wave Amplitude During Percutaneous Coronary Intervention for Chronic Total Occlusion in the Retrograde Approach
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Background: The use of retrograde approach for revascularization of chronic total occlusion (CTO) has been established with improved success rates. During the procedure of percutaneous coronary intervention (PCI) for CTO lesions in the retrograde approach, electrocardiographic R-wave amplitudes often decrease in many leads. Because the differential diagnoses of low voltages on electrocardiogram (ECG) include pericardial effusion, the presence of these changes should increase the index of suspicion for a significant pericardial effusion due to coronary perforation and prompt further evaluation such as echocardiography.

Methods: We analyzed the recent 30 patients (group-R, age 65±12) who underwent successful PCI for CTO lesions in the retrograde approach and the recent 30 patients (group-D, age 60±10) who underwent treatment for pericardial effusion during catheter intervention. Group-R was divided into 2 groups according to whether removing drainage of effusion (group-R/D(+), n=15) or not (group-R/D(-), n=15). Pre-ECG was defined as the ECG just before the catheter intervention. Post-ECG was defined as the ECG just before the procedure of drainage for Group-E/D(+), and the ECG immediately after catheter intervention for other groups.

Results: In comparison of pre-ECG and post-ECG, the leads in which R-wave amplitude significantly decreased were I, II, AVL, V1, V4, V5, and V6 in group-R; I, II, AVL, V4, V5, and V6 in group-E/D(+); but only AVL in group-E/D(-). Heart rate (HR) significantly increased in group-E/D(+)/(64±12 to 83±18, p=0.0034) between the 2 ECGs, but not in group-R and group-E/D(-). Comparing group-R and group-E/D(-), the rate of R-wave amplitude between the 2 ECGs ([R-wave amplitude in post-ECG]/[R-wave amplitude in pre-ECG]) was similar in all leads. But the rate of R-wave amplitudes between the 2 ECGs of group-R was significantly lower in leads I(0.66±0.25 vs 0.99±0.58, p=0.0074), II(0.88±0.33 vs 1.20±0.41, p=0.014), V1(0.72±0.29 vs 1.11±0.55, p=0.0019), and V5(0.67±0.31 vs 0.95±0.30, p=0.0042).

Conclusions: During the procedure of PCI for CTO lesions in the retrograde approach, ECG shows decreasing R-wave amplitudes similarly with the case of pericardial effusion requiring drainage during catheter intervention. However, by taking HR into account, decreasing R-wave amplitude during PCI for CTO lesions in the retrograde approach could be discriminated from ECG changes due to pericardial effusion during catheter intervention.

TCT-374
Results of the ALSTER CTO-OCT registry: Delayed DES endothelialization after subintimal recanalization of chronic total occlusion: Observation by optical coherence tomography
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POSTERS
Background: Successful CTO treatment is able to increase left ventricular function, exercise capacity, and reduction of mortality. Up to date no adequate information on stent struts endothelialisation after CTO treatment is available. In particular, the duration of dual antiplatelet therapy (DAPT) remains an issue of debate. Following CTO treatment, patients are at risk for restenosis as well as stent thrombosis. DAPT is able to sufficient reduce frequency of stent thrombosis, but keeps an increased risk of restenosis. Therefore, the necessity of a unnecessarily prolonged duration of dual antiplatelet therapy remains under investigation.

Methods: We performed diagnostic OCT measurements following successful CTO treatment (n = 22) as well as non-CTO DES PCI of complex lesions (n = 29). All patients had been treated with 2nd generation DES. Mean time point of OCT analysis was 7.8 months and 6.5 months, respectively (p = 0.83).

Results: The two groups were well matched concerning all parameters of stent struts with minor differences. Stent struts (in total n = 13629) were analysed and classified by OCT according to previously described methods (CTO recanalization vs. non-CTO DES; mean +/- SEM).

Conclusion: We describe delayed stent endothelialisation after CTO treatment. Our results suggest an urgent need to extend the DAPT after CTO treatment to reduce the risk of late stent thrombosis. OCT allows interventional cardiologists to safely and precisely perform follow-up examinations in patients after CTO recanalization with the ability of individualisation the duration of DAPT.

TCT-375
Comparison of Long Term Outcome After First- and Second-Generation Drug-Eluting Stents in the Treatment of Chronic Total Occlusions: Insights From a Large Registry of 1,343 Consecutive Patients

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Background: Second-generation drug-eluting stents (DES) have reduced the occurrence of target vessel revascularisation (TVR) and stent thrombosis compared to first-generation DES but the clinical impact in chronic total occlusion (CTO) is poorly described. We aimed to compare long-term outcome after 1st and 2nd-generation DES in patients with CTO.

Methods: Of 1,343 consecutive Patients who underwent PCI for CTO between 2004 and 2012, long term outcome was evaluated after successful DES implantation. Major adverse cardiac events (MACE) were defined as death, myocardial infarction (MI) or TVR.

Results: The two groups were well matched and similar concerning characteristics. Patients had been treated with 2nd generation DES. Mean time point of OCT analysis was 29% p Log Rank 0.003) compared to non-CTO PCI. TVR rates are associated with better long-term clinical outcome, when compared to 1st generation DES but the clinical impact in chronic total occlusion (CTO) is poorly described. We aimed to compare long-term outcome after 1st and 2nd-generation DES in patients with CTO.

Methods: We performed diagnostic OCT measurements following successful CTO treatment (n = 22) as well as non-CTO DES PCI of complex lesions (n = 29). All patients had been treated with 2nd generation DES. Mean time point of OCT analysis was 7.8 months and 6.5 months, respectively (p = 0.83).

Results: The two groups were well matched concerning all parameters of stent struts with minor differences. Stent struts (in total n = 13629) were analysed and classified by OCT according to previously described methods (CTO recanalization vs. non-CTO DES; mean +/- SEM).

Conclusion: We describe delayed stent endothelialisation after CTO treatment. Our results suggest an urgent need to extend the DAPT after CTO treatment to reduce the risk of late stent thrombosis. OCT allows interventional cardiologists to safely and precisely perform follow-up examinations in patients after CTO recanalization with the ability of individualisation the duration of DAPT.

TCT-378
Myocardial Performance Index After Successful Recanalization of Chronic Total Coronary Occlusions

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Background: Percutaneous recanalization of chronic total coronary occlusions (CTO) tends to show a positive effect on LV remodeling and ejection fraction (EF). Nevertheless, its effects on global cardiac functions are yet to be fully understood. Myocardial performance index (MPI) is likely to be more effective for analysis of global cardiac functions than than systolic and diastolic measures alone. The aim of this study was to evaluate the effects of recanalization of CTO on global cardiac functions by using MPI.

Methods: We evaluated 25 patients (20 men, mean age 57.5±14.1 years) who had ischemia on myocardial perfusion imaging and underwent successful percutaneous coronary intervention of right coronary artery (RCA) CTO. All patients underwent transthoracic echocardiography before (basal), 24 hours after (early) and at third month (late) of successful PCI. The MPI was calculated by using pulse wave tissue Doppler (TD) echocardiography.

Results: There was no difference between basal, early and late left ventricular ejection fraction values (55.1±10.2, 53.3±9.5, 53.3±11.2, respectively). The MPI at third month was significantly increased compared to the basal and early MPI (0.61±0.09 vs. 0.53±0.07; p <0.01 and 0.60±0.08 vs. 0.53±0.07; p <0.01, respectively). On the other hand, there was no significant difference between basal and early MPI (0.61±0.09 vs. 0.60±0.08; p=0.84, respectively). Also, TD MPI within 3 months was significantly increased when compared to others (0.58±0.09 vs. 0.53±0.07; p=0.003, 0.57±0.07 vs. 0.53±0.08; p<0.001, respectively for TD MPI seapt and 0.59±0.08 vs. 0.51±0.07; p<0.001, 0.58±0.08 vs. 0.51±0.07; p<0.001, respectively for TD MPI lateral).

Table 1. MPI values before and after recanalization of RCA CTO

<table>
<thead>
<tr>
<th></th>
<th>Basal</th>
<th>Early</th>
<th>Late</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2d MPI</td>
<td>0.61±0.09</td>
<td>0.60±0.07</td>
<td>0.53±0.07</td>
<td>0.84</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>TD seapt MPI</td>
<td>0.58±0.09</td>
<td>0.57±0.07</td>
<td>0.53±0.08</td>
<td>0.32</td>
<td>0.003</td>
<td>0.001</td>
</tr>
<tr>
<td>TD lateral MPI</td>
<td>0.59±0.08</td>
<td>0.58±0.08</td>
<td>0.51±0.07</td>
<td>0.42</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Conclusions: In this study, we have shown that successful recanalization of CTO results in increased MPI-indices global cardiac functions within 3 months, while the EF values remained unchanged.

TCT-379
Drug eluting stents with bioresorbable polymer – short and long term clinical outcomes in the treatment of CTO lesions

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Background: New generation drug eluting stents (DES) significantly improved short- and long-term vessel patency after CTO recanalization. Data on the performance of...