Editorial

Perspectives of ACC/AHA/SCAI myocardial revascularization 2022 guideline implementation in Kyrgyz Republic

In the Kyrgyz Republic, 52% of all deaths are due to cardiovascular diseases, of which 2/3 is coronary artery disease (CAD) (1). The implementation of the ACC/AHA/SCAI Guideline for Coronary Artery Revascularization 2022 (2) is a necessary objective. This Guideline is the result of joint work of the American Heart Association, the American College of Cardiology and Society for Cardiovascular Angiography and Interventions (2). These recommendations are based on recent randomized clinical trials with a high-degree of evidence. However, their full implementation is hampered by local problems in equipment and skills.

Unfortunately, the government does not provide the patients with consumables for coronary angiography, balloon angioplasty and stenting. Everything is purchased at their own expense. Therefore, primary percutaneous coronary interventions (PCI) is not performed in all the regions of the Kyrgyz Republic.

The next reason for the difficulty in introducing primary PCI is the availability of a catheter laboratory in only three cities of the country. In four out of seven regions, there is no angiographic facility at all. In this regard, the main approach for the treatment of acute myocardial infarction with ST-segment elevation (STEMI) is thrombolytic therapy. In a small proportion of patients in cities where there is a catheter laboratory, a pharmaco-invasive reperfusion method is used. The situation is especially bad with the treatment of STEMI in the presence of pulmonary edema, cardiogenic shock. In this category of patients, PCI is challenging due to the lack of experience, absence of intra-aortic balloon pump and other means of mechanical circulatory support.

Another problem is that in stable patients with acute myocardial infarction, if PCI is performed, then coronary artery bypass grafting is not performed in all cases with indication.

After reviewing the clinical guidelines, we would like to note the recommendations that can be put into practice right now.

The implementation of Heart Team approach

Recommendations: In patients for whom the optimal treatment strategy is unclear, a Heart Team approach that includes representatives from interventional cardiology, cardiac surgery, and clinical cardiology is recommended to improve patient outcomes (I, B-NR).

-The implementation of SYNTAX, STS scores

Recommendations: In patients with multivessel CAD, an assessment of CAD complexity, such as the SYNTAX score, may be useful to guide revascularization (2b, B-NR).

-The implementation of physiological methods of assessing lesion significance - fractional flow reserve (FFR) or instantaneous wave-free ratio (iFR).

Recommendations: In patients with angina or an anginal equivalent, undocumented ischemia, and angiographically intermediate stenoses, the use of FFR or iFR is recommended to guide the decision to proceed with PCI (1, A).

In stable patients with angiographically intermediate stenoses and FFR >0.80 or iFR >0.89, PCI should not be performed (3, B-R).

Patients with STEMI

Recommendations:

-In patients with STEMI and ischemic symptoms for <12 hours, PCI should be performed to improve survival (1, A).

-In patients with STEMI and cardiogenic shock or hemodynamic instability, PCI or CABG (when PCI is not feasible) is indicated to improve survival, irrespective of the time delay from MI onset (1, B-R).

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-In patients with STEMI and evidence of failed reperfusion after fibrinolytic therapy, rescue PCI of the infarct artery should be performed to improve clinical outcomes (1, C-LD).

In the section on revascularization in patients with STEMI, as we wrote above, pharmacological reperfusion is used in the Kyrgyz Republic, and in some cases pharmaco-invasive reperfusion is used. In the absence of invasive treatment, especially in patients from the regions with unstable condition, patients are referred to the PCI center. In multivessel disease, as a rule, patients undergo stenting of the infarct artery. In rare cases, stenting of other arteries may be possible.

Patients with non-STEMI

Recommendations:

-In patients with NSTE-acute coronary syndrome (ACS) who are at elevated risk of recurrent ischemic events and are appropriate candidates for revascularization, an invasive strategy with the intent to proceed with revascularization is indicated to reduce cardiovascular events (1, A)

-In patients with NSTE-ACS and cardiogenic shock who are appropriate candidates for revascularization, emergency revascularization is recommended to reduce risk of death (1, B-R)

-In appropriate patients with NSTE-ACS who have refractory angina or hemodynamic or electrical instability, an immediate invasive strategy with intent to perform revascularization is indicated to improve outcomes (1, C-LD)

In patients with non-STEMI PCI is performed less frequently than in patients with STEMI. An emergency strategy for life-threatening conditions is practically not carried out for the above reasons. In a part with recurrence of ischemia and increase in troponin in rare cases with a high-risk according to GRACE score, it is possible to perform PCI.

Stable ischemic heart disease

Recommendations (1):

-In patients with structural ischemic heart disease and multivessel CAD appropriate for either CABG or PCI, revascularization is reasonable to lower the risk of cardiovascular events such as spontaneous myocardial infarction, unplanned urgent revascularizations, or cardiac death (2a, B-R)

In patients with stable ischemic heart disease, recommendations for revascularization are followed, including patients with chronic occlusion.

Antiplatelet therapy

Dual antiplatelet therapy with or without revascularization with aspirin and clopidogrel is used in the Kyrgyz Republic. Ticagrelor has recently been available in the country and also we have begun to use it. Prasugrel is still not available in our country. Dual antiplatelet therapy after PCI is used accordingly Precise-DAPT and DAPT scores. Glycoprotein IIb/IIIa receptor inhibitors are available and used for stent thrombosis, no-reflow syndrome.

Chronic kidney disease (CKD)

Recommendations:

-In patients with CKD undergoing contrast media injection for coronary angiography, measures should be taken to minimize the risk of contrast-induced acute kidney injury (AKI) (1, C-LD)

-In patients with STEMI and CKD, coronary angiography and revascularization are recommended, with adequate measures to reduce the risk of AKI (1, C-EO)

The glomerular filtration is assessed as a routine procedure. If there is a high risk of kidney damage, we use adequate hydration before and after procedure. Also we use the Best Practices from the Guideline.

Best Practices in the Catheterization Laboratory for Patients with CKD undergoing angiography

-Assess the risk of contrast-induced AKI before the procedure

-Administer adequate preprocedural hydration

-Record the volume of contrast media administered, and minimize contrast use

-Pretreat with high-intensity statins

-Use radial artery if feasible

-Do not administer N-acetyl-L-cysteine to prevent contrast-induced AKI
-Do not give prophylactic renal replacement therapy
-Delay CABG in stable patients after angiography beyond 24 hours when clinically feasible.

General procedure issues for PCI
Recommendations:
-In patients with ACS undergoing PCI, a radial approach is indicated in preference to a femoral approach to reduce the risk of death, vascular complications, or bleeding (1, A)
-In patients with SIHD undergoing PCI, the radial approach is recommended to reduce access site bleeding and vascular complications (1, A)
A radial approach is implemented in catheter laboratory as a routine procedure. In those patients who are unable to get radial artery catheterization because of anatomic or clinical limitations, femoral artery access remains the default strategy.
Recommendations:
-In patients undergoing PCI, DES should be used in preference to BMS to prevent restenosis, MI, or acute stent thrombosis (1, A)
In the Kyrgyz Republic drug-eluted stents are available and used in PCI.

Recommendations:
-In patients undergoing coronary stent implantation, intravascular ultrasound (IVUS) can be useful for procedural guidance, particularly in cases of left main or complex coronary artery stenting, to reduce ischemic events (2a, B-R)
Unfortunately, we do not have the IVUS equipment.
That is why we do not do these recommendations.

Recommendations:
-In patients with STEMI, routine aspiration thrombectomy before primary PCI is not useful (3, A).
We do not use aspiration thrombectomy because we do not have the devices for this procedure. According to the recommendations, larger studies have not demonstrated improved cardiovascular outcomes with thrombus aspiration.

Recommendations:
-In patients undergoing PCI, administration of intravenous unfractionated heparin (UFH) is useful to reduce ischemic events (1, C-EO). It is used in patients undergoing PCI, APPT is controlled accordingly the previous recommendations.

Conclusion
Studying the guidelines of American College of Cardiology, American Heart Association and European Society of Cardiology, we are trying to implement new recommendations, although there are certain difficulties associated with the economic situation in our country. Despite this, second-generation drug-eluting stents, ticagrelor, and glycoprotein II a/III b inhibitors can be used. In the future, we will continue to study and implement new recommendations to improve the outcomes of CAD in our country.

We think that for challenging cases like cardiogenic accompanying STEMI – team approach including intuitivists and surgeons, for remote regions- organizing appropriate for time to balloon transfers from remote areas to cities with catheterization and PCI facilities can be implemented.

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Incredibly bright rainbow after first spring thunderstorm in the Carpathians, Skole, Ukraine. Yuriy Ivaniv, Lviv, Ukraine.