ORAL ABSTRACT SESSION

Non invasive evaluation of coronary artery disease

12/12/2013, 14:00–15:30

Location: Bursa

354

Myocardial perfusion imaging in non-stenotic coronary lesions: does it make sense?

A. Kisko[1]; M. Vereb[2]
[1]Cardiology Clinic, Reiman University Hospital, Sekcov Polyclinic, Presov, Slovak Republic; [2]Sekcov Polyclinic, Nuclear Medicine, Presov, Slovak Republic

Coronary angiography has diagnostic limitation in identifying non-stenotic coronary lesion (NSCL) responsible for ischemia. Myocardial perfusion defects in patients (pts) with NSCL have often been unreasonably considered by invasive cardiologists as being "false positive". We evaluated a prognostic value of gated SPECT MPI in unselected group of the pts with NSCL over a 24 month period of follow-up.

170 pts (115 males, 67.6%; age 42-68 years; mean age 56.4 ± 9.2 years) with NSCL (stenosis of 50% or less of LAD and 70% or less of any other coronary artery or its major branches) were enrolled into the study. Retrospective analysis of 86 pts with NSCL and subsequent positive MPS performed within 6 months from the time of coronary angiography (study group) and 84 pts with normal scan results (control group) was performed. Follow-up period was for 24 months from the time of MPI or up to the time of major coronary event (MCE) - first occurrence of cardiac death or myocardial infarction.

Over a two-year follow-up, approximately 11% of the pts in study group had MCE as compared to 3.2% in the control group ($P < .01$). Abnormal MPI, EF $< 35\%$ and high levels of hs-CRP were independent predictors for MCE in the study group. In multivariate analysis only an abnormal MPI remained to be an independent predictor regardless of size or severity of perfusion abnormalities ($P < .005$).

Pts with NSCL on coronary angiography and myocardial perfusion defects have relatively high event rate (11%) of MCE over a period of 24 months from the time of MPI. So, we highly recommend gated SPECT MPI to be obligatory performed in all cases of NSCL to avoid life-threatening coronary complications in forthcoming future.

355

Analysis of coronary CT angiography indications in symptomatic patients according 2006 and 2010 appropriate use Guidelines

M. Barreiro Perez[1]; M. Martin Fernandez[1]; OC. Cimadevilla Fernandez[2];
A. Renilla Gonzalez[3]; E. Diaz Pelaez[1]; J. Rozado Castano[1]
[1]University Hospital Central de Asturias, Oviedo, Spain; [2]Hospital San Agustin, Department of Cardiology., Aviles, Spain; [3]Hospital Álvarez Buylla, Department of Cardiology., Mieres, Spain

Introduction: Appropriate Use Guidelines (GUA) has been created with the aim of improve the rational use of diagnostic technologies. The aim of our study was investigate the indications for coronary CT angiography (CCTA) in symptomatic patients without previous coronary disease.

Methods: We collected 243 patients who underwent 64-slice CCTA between 2006 and 2012. The indication was established by main patient's cardiologist and classified as current GUA. We calculate the cardiovascular risk (CVR) according to ESC guidelines. We analyze the combined endpoint (revascularization / SCA / death) during follow-up.

Results: 57 ± 13 years, 46% male. It has a low CVR 37%, moderate 27%, high 17% and very high 19%. 105 studies were performed between 2006 -2009. According GUA 2006, 22% of studies were appropriate, 5% uncertain, 36% inappropriate, and 36% of them could not be classified. 138 studies were performed between 2010-2012. According GUA 2010, 43% of those were appropriate, 22% uncertain, 17% inappropriate and 18% unclassifiable. Significant differences were noted in all sections between both groups ($p < 0.01$). After analyze 2006-2009 and 2010-2012 groups with the two GUA's (2006 and GUA 2010), there were no statistical differences in any section. This suggests similarly indication pattern in two groups.

When the indication was appropriate, coronary artery disease was ruled out in 87% compared to 71% of the inappropriate ($p < 0.05$). There were no differences in the interpretability of the studies. The most common inappropriate indications were negative prior ischemia detection without new symptoms (55%), high / very high risk with interpretable ECG and exercise ability (43%) and positive prior ischemia detection (2%). During follow-up (2.8 (IR 2.4) years), endpoint occurred in 5% of appropriate indications (5 revascularizations) compared with 12% in patients with inappropriate indication (4 revascularizations and one SCA) ($p < 0.01$).

Conclusions: A high percentage of inappropriate indications were noted in our sample. GUA 2010 significantly decreased the percentage of inappropriate and unclassifiable indications, likely due to an increase in clinical settings more than to an improvement in the clinical indication. Coronary heart disease was ruled out significantly more when the indication was appropriate. Patients with inappropriate indication had a greater number of events in the follow-up.

356

Predicting the incidence of CAD in CT coronary angiography based on the number of cardiac risk factors, ethnicity, sex and typicality of chest pain

P. Dobson[1]; P. Cai[1]; P. Leung[1]; K. Marshall[1]; M. Albarjas[2]; T. Rogers[2]; J. Hill[2]; K. Alfakih[1]
[1]Lewisham Healthcare NHS Trust, London, United Kingdom; [2]King's College London, London, United Kingdom

Background: The 2010 UK NICE guidelines on patients presenting with chest pain provide a risk score to determine the probability that a patient has coronary artery disease (CAD). The risk score (CAD Score) is based on the 1979 Diamond and Forrester data which was based on nearly 5000 patients undergoing invasive coronary angiography. Cardiac risk factors were used to define High and Low risk patients. The guidelines state that High risk = Diabetes, smoking, hyperlipidaemia. It is not clear wether the guidelines intended a single risk factor or all three risk factors to classify a patient as high risk.

Methods: We assessed the incidence of normal, Mild ($<50\%$ stenosis) and significant ($>50\%$ stenosis) CAD on CT coronary angiography in a cohort of 148 patients to establish the predictive value of single vs. all three risk factors. Furthermore, we assessed the incidence of CAD based on ethnicity, sex and typicality of the chest pain.

Results: Amongst patients with no risk factors, 66.1% had normal coronary arteries, 25.0% had mild CAD and 7.1% significant CAD. Amongst patients with three cardiac risk factors, 40.0% had normal coronary arteries, 30.0% had mild disease and 30.0% had significant CAD.

The incidence of CAD in patients presenting with chest pain was similar for black and white patients. 71.4% of black patients had normal coronary arteries, 17.1% had mild disease and 11.4% had significant coronary artery disease whilst 75.0% of white patients had normal coronary arteries, 22.9% mild disease and 14.6% significant disease. Black patients made up 24.5% of the cohort.

There was a similar incidence in CAD between males and females. 63.4% of males had normal coronary arteries, 29.3% mild CAD and 7.3% significant CAD whilst 72.7% of females had normal coronary arteries, 16.7% mild CAD and 10.6% significant CAD. Male patients made up 55.4% of our cohort.

55.1% of patients presenting with typical chest pain had normal coronary arteries, 32.7% had mild disease and 12.2% had significant disease. 76.0% of patients with atypical chest pain had normal coronary arteries, 17.7% mild disease and 6.3% had significant disease

Conclusion: In our cohort patients with three risk factors had a much higher incidence of CAD than patients with a single risk factor. NICE guidelines need clarification on wether they intended High Risk to mean a single risk factor or three risk factors.

There was little difference in the incidence in CAD between Blacks and whites and males and females. However, typicality of the chest pain was a good predictor of CAD.

357

A comparison between CT coronary angiography and functional tests, in patients with stable chest pain and moderate to high predicted risk of coronary artery disease

A. Cai[1]; P. Dobson[1]; P. Leung[1]; K. Marshall[1]; M. Albarjas[2]; T. Rogers[2]; S. Basu[1]; K. Alfakih[1]
[1]Lewisham Healthcare NHS Trust, London, United Kingdom; [2]King's College London, London, United Kingdom

Introduction: The 2010 UK NICE guidelines on chest pain recommended the use of computed tomography coronary angiography (CTCA) in patients with low pre-test probability, dobutamine stress echo (DSE) or myocardial perfusion Scintigraphy (MPS) in patients with moderate pre-test probability and invasive coronary angiography (ICA) in patients with high pre-test probability, of having coronary artery disease (CAD). A previous local audit demonstrated relatively low incidence of CAD in patients with moderate and high pre-test probabilities and hence we investigate these patients non-invasively.

Methods: We retrospectively reviewed 213 consecutive patients who were seen in the outpatient setting between August 2010 and April 2012 and had a moderate or high risk of CAD based on NICE CAD score, which is based on the 1979 Diamond Forrester method. We compared the performance of the tests. The results were analysed using SPSS software; ANOVA tests were used for mean values and chi square for proportions across groups.

Results: CTCA was performed in 107, DSE in 67 and MPS in 39 patients. 62% of patients were male. The MPS group were older ($p < 0.01$) and had a higher incidence of hypercholesterolemia and hypertension ($p < 0.01$). 9.4% of the patients undergoing CTCA were found to have significant CAD requiring revascularisation. Functional testing led to revascularisations in 10.3% of the MPS group and 1.5% of the DSE group (4.7% of the functional test cohort were revascularised). The difference in the revascularisation rates between the two cohorts was not statistically significant ($p = 0.28$).

83% of the CTCA patients found to have significant CAD were revascularised. For the functional tests, 83% of patients found to have ischaemia were revascularised.

Discussion: Our real-world data suggests that CTCA can be at least as effective as functional tests in detecting significant CAD and may lead to more revascularisations than functional tests. CTCA should be considered as an effective alternative to functional tests in patients with higher pre-test probability of CAD, in hospitals with limited access to functional tests. A further advantage of CTCA is that it can detect milder degrees of atherosclerosis and these patients would benefit from secondary prevention.

358

Diagnostic accuracy of multidetector computed tomography coronary angiography

D. Andreini; G. Pontone; S. Mushtaq; E. Bertella; E. Conte; A. Baggiano; A. Annoni; A. Formenti; C. Fiorentini; M. Pepi
University of Milan, Foundation Monzino (IRCCS), Center Cardiology, Dpt of Cardiology, Milan, Italy

Objectives: To assess diagnostic performance of multidetector computed tomography (MDCT) for coronary artery evaluation before transcatheter aortic valve implantation (TAVI).

Background: MDCT provides detailed assessment of valve annulus and iliofemoral vessels in TAVI patients. However, data on diagnostic performance of MDCT coronary angiography (MDCT-CA) are scarce.

Methods: 325 consecutive patients [237 without previous myocardial revascularization, 47 with previous coronary stenting and 41 with previous coronary artery bypass graft (CABG)] underwent invasive coronary angiography (ICA) and MDCT before TAVI. MDCT-CA was performed using the same data set dedicated to standard MDCT aortic annulus evaluation. MDCT-CA evaluability and diagnostic accuracy in comparison with ICA as gold standard were assessed.

Results: The MDCT-CA evaluability of native coronaries was 95.6%. The leading cause of unevaluability was beam-hardening artifact due to coronary calcifications. In a segment-based analysis, MDCT-CA showed sensibility, specificity, positive predictive value, negative predictive value and accuracy for detecting $\geq 50\%$ stenosis of 91%, 99.2%, 83.4%, 99.6% and 98.8%, respectively. The MDCT-CA evaluability of coronary stents was 82.1% . In a segment-based analysis, MDCT-CA showed sensibility, specificity, positive predictive value, negative predictive value and accuracy for detecting $\geq 50\%$ in-stent restenosis (ISR) of 94.1%, 86.7%, 66.7%, 98.1% and 88.3%, respectively. All CABGs were correctly assessed by MDCT-CA. In a patient-based analysis, MDCT-CA showed sensibility, specificity, positive predictive value, negative predictive value and accuracy of 89.7%, 90.8%, 80.6%, 95.4% and 90.5%, respectively.

Conclusions: MDCT-CA allows to correctly ruling out the presence of significant native coronary artery stenosis, significant ISR and CABG disease in patients referred for TAVI.