0171

Identification of complicated carotid plaques by adding functional fluorodeoxyglucose-positron emission tomographic imaging to morphological characteristics on computed tomographic angiography

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Aim We developed a simple semi-quantitative score for the analysis of carotid plaques with FDG-PET-CTA imaging and tested whether adding functional imaging criteria extracted from FDG-PET imaging to morphological plaque characteristics identified with CTA might improve the detection of complicated plaques.

Material and Methods Twenty-eight patients scheduled for carotid endarterectomy were imaged with PET after injection of FDG followed by CTA of the supra-aortic trunks. Morphological aspects of plaques identified with CTA and metabolic activity quantified with FDG-PET (Tissue to Background ratio, TBR) were measured in the carotid segment with the highest degree of luminal stenosis and graded using semi-quantitative CT and PET scores. Combined score was calculated for each carotid artery by summing CT and PET scores. After carotid endarterectomy, vascular surgeons classified carotid plaques macroscopically as complicated or non-complicated.

Results Twenty-eight carotid arteries were operated in 26 patients (24 symptomatic patients). Sixteen plaques were classified macroscopically as complicated. CTA detected hypodense regions and ulcerations in 81% and 25%, of complicated plaques, and in 33% and 6% of non-complicated plaques, respectively. Hypodense areas on CTA identified complicated plaques with a sensitivity of 87% and a specificity of 67%. Mean TBR with FDG-PET was measured at 2.2±0.4 in complicated plaques and 1.9±0.3 in non-complicated plaques (p<0.05). Values for the semi-quantitative score based on plaques characteristics with CTA and FDG-PET were 5.4±1.7 in complicated plaques and 2.5±2.4 in non-complicated plaques (p<0.05). A combined PET-CT score ≥3 identified complicated plaques with a sensitivity of 100% and a specificity of 67%.

Conclusions Adding FDG-PET imaging criteria to morphological characteristics of plaques on CTA improved the sensitivity of the detection of complicated carotid plaques.

The author hereby declares no conflict of interest

0075

Screening of the aneurysm of the abdominal aorta during the echocardiography: experience of an Algerian center

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Background An abdominal aortic aneurysm (AAA) is potentially fatal when ruptured. Whereas the transcranial echocardiography (TTE) protocol does not routinely include examination of the infra renal abdominal aorta, the protocol is performed quickly and easily for AAA screening. The main aim of this study is to analyze the utility of transcranial echocardiography in the study of infrarenal aorta and AAA screening in selected population.

Methods The study included 674 patients (452 men, 222 women) consecutively assessed by TTE and, where possible, abdominal ultrasound for any indication of an abdominal aortic aneurysm.

Results An AAA was detected in 31 patients (6.4%). The mean age of AAA patients was 72 years old.29 patients of whom were male. The presence of AAA was associated with male gender and older age and smoking. In this study it makes possible to pose a surgical act among 6 patients after the discovery of an aneurysm diameter more than 55mm.

Conclusions Screening of AAA during TTE is easy and feasible. Detection of asymptomatic AAA may save lives. Therefore, opportunistic examination of the abdominal aorta during routine TTE, which involves little time and cost, would appear to be effective, at least in patients over 60 years of age, especially in men.

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0062

Impact of diabetes and hypertension on the longitudinal systolic function of the left ventricle

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Introduction Hypertension is responsible for many structural changes with myocardial fibrosis leading to left ventricular hypertrophy and progressive deterioration over time of systolic left ventricular and diastolic function. Hypertension and type 2 diabetes are major causes of ventricular dysfunction and heart failure risk factors. Current data suggest that the longitudinal LV systolic dysfunction was found in the early stages of hypertensive cardiomyopathy. Recently, the development of the imaging (2D) strain has facilitated simple and independent measurement of LV strain parameters in the longitudinal, circumferential and radial.

Materials and methods This work is to achieve in a series of 30 hypertensive patients with diabetes and 30 non diabetic hypertensive patients (aged 25-75 years) a complete echo cardiographic study, including LVEF biplane Simpson method, calculation of left ventricular mass indexed and the relative thickness parietal to differentiate the eccentric and concentric left ventricular
hypertrophy (LVH), analysis of diastolic function and finally the study of the longitudinal strain of LV by speckle tracking technique (calculation GLS). We excluded from the study patients with secondary hypertension, valvular stenosis or fleeting, arrhythmia, coronary artery disease history.

Results 60 diabetic patients and non-diabetic hypertensive had an LVEF greater than 55% as measured by biplane Simpson method and the conventional method.

LVH was present in 85% of diabetic hypertensive and against 45% in non-diabetic. The calculation of LV mass according to the ASE method was used to select 20 diabetic patients with concentric LVH against 5 with eccentric LVH.

The LV mass index was higher with an average of 120 g/m² in diabetic patients with LVH compared with non-diabetic patients with LVH. The evaluation of filling pressures by the E/E' showed high pressures in 8 diabetic hypertensive patients against only 3 non-diabetic hypertensive patients.

Analysis of longitudinal function by calculating the GLS showed lower rates to 18% in 18 diabetic hypertensive patients against 9 non-diabetic hypertensive patients.

GLS was lower than −18% in eight diabetic patients with filling pressures high. We note in this modest work that LVH was clearly predominant in the HTA arm + diabetes with a consequent decrease in longitudinal contraction index. In diabetic hypertensive patients, LVH was generally concentric. Elevated filling pressures was found in 8 diabetic hypertensive patients against only 3 non-diabetic hypertensive patients, with good correlation with the decrease in the GLS.

Conclusion In conclusion, the evaluation of longitudinal systolic function by 2D strain has an important role in the early detection of subclinical heart disease in diabetic hypertensive patients, and could thus identify patients at high risk of heart failure may benefit from preventive strategies.

The author hereby declares no conflict of interest

0242

Carotid intima-media thickness in the Algerian population: reference ranges and association with cardiovascular risk factors

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Introduction and objectives Carotid intima-media thickness as measured with ultrasonography is an inexpensive and noninvasive predictor of cardiovascular events. The objectives of this study were to determine the population reference ranges of carotid intima-media thickness for individuals aged 35-84 years in Algerian cohort and to analyze the association of carotid intima-media thickness with cardiovascular risk factors (age, smoking, diabetes, pulse pressure, lipid profile, and body mass index).

Methods Population-based cross-sectional study conducted in military hospitals of Constantine and Algiers (Algeria). We described the mean and maximal values of carotid intima-media thickness of the carotid artery and of its 3 segments (common carotid, carotid bulb and internal carotid). We assessed cardiovascular risk factors and analyzed their association with carotid intima-media thickness using adjusted linear regression models.

Results A total of 1547 individuals (54% women) were included, with mean age 58 years. Men showed significantly higher mean common carotid intima-media thickness than did women (0.71 vs 0.67 mm). The strongest predictors of this measure were age (coefficients for 10-year increase: 0.65 and 0.58 for women and men, respectively), smoking in men (coefficient: 0.26), high-density lipoprotein cholesterol in women (coefficient for 10 mg/dL increase: −0.08) and pulse pressure in both sexes (coefficients for 10 mmHg increase: 0.08 and 0.23 for women and men, respectively). The results were similar for the mean carotid intima-media thickness of all the segments.

Conclusions This population-based study presents the reference ranges for carotid intima-media thickness in the Algerian population. The main determinants of carotid intima-media thickness were age and pulse pressure in both sexes.

The author hereby declares no conflict of interest

0503

Asymptomatic carotid stenosis in patient with acute coronary syndrome: who should be screened?

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Background While prevalence and risk factors of carotid stenosis in acute coronary syndrome (ACS) are under investigated, we evaluated patients admitted in our intensive care unit for an ACS in order to define if a screening of this population would be relevant.

Methods Systematic carotid Doppler ultrasound screening was done on 102 consecutive patients admitted to the intensive care unit after an ACS with or without ST elevation. Degree of stenosis was determined using NASCET and hemodynamic criteria. Clinical data and risk factors of atherosclerosis were collected for all patients. The Chi square test was used for categorical variables and ordinal variables were analyzed using Wilcoxon or Student’s tests.

Results Fifty-two percent of patient (n=53) had at least one carotid stenosis. Mild stenosis (≤50%) concerned 45 patients (44%) while 6 patients (6%) had moderate (50-69%) stenosis and 2 patients (2%) had severe (>70%) stenosis. As shown in the table, on univariate analysis, the only predictive factors of moderate and severe stenosis were age >75years (OR=11.8; p=0.016), diabetes mellitus (OR=3.9; p=0.05), history of myocardial infarction (OR=11.4; p=0.002) and left ventricular ejection fraction <40% (OR=6.6; p=0.007).

Abstract 0503 – Table: Predictive factors of carotid stenosis >50% in patient with ACS

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>OR</th>
<th>IC 95%</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexe (male)</td>
<td>NA</td>
<td>NA</td>
<td>0.32</td>
</tr>
<tr>
<td>Age &gt;75 years</td>
<td>11.8</td>
<td>1.95-71.5</td>
<td>0.016</td>
</tr>
<tr>
<td>Current smoking</td>
<td>0.15</td>
<td>0.03-0.49</td>
<td>0.047</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>3.9</td>
<td>0.75-15.9</td>
<td>0.053</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3.1</td>
<td>0.7-14.2</td>
<td>0.15</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>1.7</td>
<td>0.43-7.05</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Cardiovascular history

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>IC 95%</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral artery disease</td>
<td>6.57</td>
<td>0.76-56.8</td>
<td>0.09</td>
</tr>
<tr>
<td>History of stroke or TIA</td>
<td>1.89</td>
<td>0.24-14.9</td>
<td>0.95</td>
</tr>
<tr>
<td>History of myocardial infarction</td>
<td>11.4</td>
<td>2.6-49.35</td>
<td>0.002</td>
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</tbody>
</table>

ACS initial presentation and coronary angiography results

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>IC 95%</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEMI</td>
<td>0.3</td>
<td>0.06-1.28</td>
<td>0.22</td>
</tr>
<tr>
<td>Multi-vessel lesions</td>
<td>3.23</td>
<td>0.79-13.1</td>
<td>0.07</td>
</tr>
<tr>
<td>Left main artery stenosis</td>
<td>3.15</td>
<td>0.63-15.7</td>
<td>0.17</td>
</tr>
<tr>
<td>Left ventricular ejection fraction &lt;40%</td>
<td>6.6</td>
<td>1.58-27.48</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Conclusion Carotid stenosis is frequent in this population but lesions are often mild and a systematic screening should probably not be recommended. Patients >75 years, diabetics or those with severe coronaropathy seem however to represent a sub-population at risk to have a stenosis ≥50% in which a screening could be proposed during the hospitalisation.

The author hereby declares no conflict of interest

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