



Available online at
SciVerse ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en



CLINICAL RESEARCH

Accuracy of multislice computed tomography in the preoperative assessment of coronary disease in patients scheduled for heart valve surgery

Précision diagnostique du scanner 64 barrettes dans l'évaluation de la maladie coronaire avant la chirurgie valvulaire cardiaque

Réda Jakamy^{a,*}, Olivier Barthélémy^b,
Claude Le Feuvre^b, Emmanuel Berman^b,
Rhéda Boutekadjirt^b, Philippe Cluzel^b,
Jean-Philippe Metzger^b, Gérard Helft^b

^a Hôpital privé Saint-Martin, 18, rue des Roquemonts, 14000 Caen, France

^b Heart Institute, Pitié-Salpêtrière University Hospital, Paris, France

Received 18 December 2011; received in revised form 3 May 2012; accepted 22 May 2012
Available online 17 July 2012

KEYWORDS

Coronary angiography;
Coronary disease;
Diagnostic accuracy;
Multislice computed tomography;
Valve surgery

Summary

Background. – Coronary angiography (CA), an invasive and expensive procedure, is still recommended in most patients referred for elective valve surgery. Multislice computed tomography (MSCT) is a promising alternative technique to rule out significant coronary artery lesions.

Aim. – To evaluate MSCT in detecting significant coronary artery lesions in patients referred for elective valve surgery.

Methods. – Between August 2007 and December 2010, patients referred for elective valve surgery were identified prospectively and underwent 64-slice MSCT and CA. We compared significant coronary stenoses, defined as a reduction of luminal diameter $\geq 50\%$, to establish the diagnostic accuracy of MSCT. All coronary segments were analysed and uninterpretable lesions were scored positive.

Results. – Forty-eight patients were included (62.5% male; mean age 65 ± 12 years), the majority had aortic insufficiency (37.7%) or aortic stenosis (32.0%). The prevalence of significant coronary artery stenoses was 27.1%. The sensitivity, specificity, positive and negative predictive values of MSCT were 77%, 89%, 71% and 91%, respectively, in a patient-based analysis; 82%,

Abbreviations: AHA, American Heart Association; CA, coronary angiography; CABG, coronary artery bypass graft; CAD, coronary artery disease; CI, confidence interval; IQR, interquartile range; MR, mitral regurgitation; MSCT, multislice computed tomography.

* Corresponding author.

E-mail address: redjack@hotmail.fr (R. Jakamy).

MOTS CLÉS

Chirurgie valvulaire ;
 Coronarographie ;
 Maladie
 coronarienne ;
 Scanner coronaire ;
 Valvulopathie

86%, 64% and 94% in a revascularization-based analysis; 67%, 94%, 52% and 97% in a vessel-based analysis; and 65%, 98%, 52% and 99% in a segment-based analysis. Overall, CA could have been avoided in 65% of patients.

Conclusion. – In patients referred for elective valve surgery, MSCT had a high diagnostic accuracy to rule out significant coronary stenoses. However, larger multicenter studies in an unselected population of patients are needed to determine its place within the range of diagnostic tool in the preoperative assessment of valvular heart disease.

© 2012 Elsevier Masson SAS. All rights reserved.

Résumé

Contexte. – La coronarographie est un examen coûteux et invasif, toujours recommandé chez les patients programmés pour une chirurgie valvulaire. La tomographie multicoupe (TDMC) apparaît comme une alternative prometteuse pour éliminer les sténoses coronaires significatives.

Objectif. – Pour évaluer la précision diagnostique de la TDMC dans l'évaluation de la maladie coronaire avant la chirurgie valvulaire cardiaque.

Méthodes. – Entre août 2007 et décembre 2010, les patients adressés pour une chirurgie de remplacement valvulaire ont été inclus pour effectuer de manière prospective une TDMC et une coronarographie. On a comparé les sténoses coronaires significatives, définies par la réduction du diamètre luminal supérieur ou égal à 50 %, pour établir la précision diagnostique de la TDMC. Les lésions ininterprétables ont été considérées positives.

Résultats. – Quarante-huit patients ont été inclus (62,5 % de sexe masculin ; âge moyen de 65 ± 12 ans), la majorité avait une insuffisance aortique (37,7 %) ou un rétrécissement aortique (32,0 %). La prévalence de la maladie coronaire était de 27,1 %. La sensibilité, spécificité, les valeurs prédictives positives et négatives de la TDMC étaient respectivement de 77 %, 89 %, 71 % et 91 % en analyse par patient ; 82 %, 86 %, 64 % et 94 % en analyse par revascularisation ; 67 %, 94 %, 52 % et 97 % en analyse par artère ; et 65 %, 98 %, 52 % et 99 % en analyse par segment. La coronarographie aurait pu être évitée chez 64,5 % des patients.

Conclusion. – Chez les patients programmés pour une chirurgie valvulaire, la TDMC bénéficie d'une bonne précision diagnostique pour exclure les sténoses coronaires significatives. Toutefois, de larges études multicentriques portant sur une population non sélectionnée de patients, sont nécessaires pour déterminer sa place au sein de l'arsenal diagnostique dans l'évaluation préopératoire de la maladie valvulaire cardiaque.

© 2012 Elsevier Masson SAS. Tous droits réservés.

Background

Various studies have shown that combined bypass and valve surgery of significant coronary artery disease (CAD) reduces early and late mortality [1]. Coronary angiography (CA) is the gold standard for diagnosing CAD, and is recommended in patients scheduled for valve surgery [2]. However, CA is an invasive and expensive procedure, with a small (0.1–0.2%) risk of major complications such as death, myocardial infarction and stroke. A primary non-invasive technique as an alternative to CA to improve preoperative risk stratification in patients referred for valve surgery is therefore highly desirable.

Multislice computed tomography (MSCT) has a good negative predictive value for ruling out CAD in patients with intermediate pre-test probability [3]. However, few studies have examined coronary artery assessment by MSCT in patients scheduled for elective valve surgery [4,5].

We conducted a prospective study to evaluate the diagnostic accuracy of 64-slice MSCT for the detection of significant artery lesions in patients referred for elective valve surgery.

Methods**Study population**

Consecutive patients scheduled for valve surgery were screened prospectively from August 2007 to December 2010. As a previous study had shown good results for MSCT in patients with aortic stenosis [6], we initially excluded patients with aortic stenosis in order to explore the diagnostic accuracy of MSCT in patients with other valve diseases. However, owing to low patient numbers, from mid-2008 we also included patients with aortic stenosis. Exclusion criteria included: atrial fibrillation, previous coronary artery bypass graft (CABG), an unstable haemodynamic state, acute renal insufficiency, previous allergic reaction to iodine contrast media, pregnancy and lactation. The study was approved by the French Society of Cardiology; and all patients signed an informed consent form.

Patient preparation

MSCT and CA were performed in all patients within 3 weeks of each other. All patients with baseline heart rate greater

Download English Version:

<https://daneshyari.com/en/article/2889350>

Download Persian Version:

<https://daneshyari.com/article/2889350>

[Daneshyari.com](https://daneshyari.com)