Archives of Cardiovascular Disease (2017) xxx, xxx—xxx

Available online at ScienceDirect www.sciencedirect.com

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

CLINICAL RESEARCH

Radial versus femoral access for coronary angiography and intervention is associated with lower patient radiation exposure in high-radial-volume centres: Insights from the RAY'ACT-1 study

Les coronarographies et angioplasties coronaires par voie radiale sont associées à une irradiation du patient inférieure à la voie fémorale dans les centres à haut volume de voie radiale. Données de l'étude RAY'ACT-1

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Abbreviations: BMI, body mass index; CA, diagnostic coronary angiography; KAP, Kerma-area product; PCI, percutaneous coronary intervention; RAY'ACT, Patient's Exposure to X-Ray During Coronary Angiography and Percutaneous Transluminal Coronary Intervention; RIVAL, radial versus femoral.

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http://dx.doi.org/10.1016/j.acvd.2016.09.002

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Received 25 June 2016; received in revised form 19 August 2016; accepted 13 September 2016

KEYWORDS
Coronary angiography;
Percutaneous coronary intervention;
Radial access;
Kerma-area product;
Radiation protection

Summary
Background. — Literature suggests that radial access is associated with higher radiation doses than femoral access.
Aims. — To compare patient radiation exposure during coronary angiography (CA) and percutaneous coronary intervention (PCI) with radial versus femoral access.
Methods. — RAY'ACT is a nationwide, multicentre, French survey evaluating patient radiation in interventional cardiology. Variables of patient exposure from 21,675 CAs and 17,109 PCIs performed at 44 centres during 2010 were analysed retrospectively.
Results. — Radial access was used in 71% of CAs and 69% of PCIs. Although median fluoroscopy times were longer for radial versus femoral access (CA, 3.8 vs 3.5 minutes [$P < 0.001$]; PCI, 10.4 vs 10.1 minutes [$P = 0.001$]), the Kerma-area product (KAP) was lower with radial access (CA, 26.8 vs 28.1 Gy·cm^2; PCI, 55.6 vs 59.4 Gy·cm^2; both $P = 0.001$). Differences in KAP remained significant in the multivariable analysis ($P < 0.01$), and in a propensity score-matched analysis ($P = 0.01$). A significant interaction was found between KAP and the percentage of procedures with radial access by centre ($P < 0.001$). KAP was higher by radial versus femoral access in low-radial-volume centres, and lower in high-radial-volume centres. Radiation protection techniques, such as the use of low frame rates (7.5 frame/s), were used more frequently in high-radial-volume radial centres.
Conclusions. — In this multicentre study, radial access was associated with lower radiation doses to patient than femoral access in high-radial-volume centres. Provided that radioprotection methods are implemented, radial access could be associated with lower patient radiation exposure.

MOTS CLÉS
Coronarographie ;
Angioplastie coronaire ;
Voie radiale ;
Produit dose-surface ;
Radioprotection

Résumé
Contexte. — La voie radiale est considérée comme plus irradiante pour les patients que la voie fémorale pour les coronarographies (CA) et les angioplasties coronaires (PCI)
Objectifs. — Cette étude a comparé l'exposition des patients lors de CA et PCI réalisées par voie radiale et fémorale.
Méthodes. — RAY'ACT est une étude française multicentrique évaluant l'exposition des patients aux rayons x lors des procédures de cardiologie interventionnelle coronaire, qui a analysé rétrospectivement les paramètres d'exposition pour 21 675 CA et 17 109 PCI réalisées dans 44 centres en 2010.

Please cite this article in press as: Georges J-L, et al. Radial versus femoral access for coronary angiography and intervention is associated with lower patient radiation exposure in high-radial-volume centres: Insights from the RAY'ACT-1 study. Arch Cardiovasc Dis (2017), http://dx.doi.org/10.1016/j.acvd.2016.09.002