Canadian Journal of Cardiology ■ (2016) 1–7

Clinical Research

Disparities in the Use of Drug-Eluting Coronary Stents by Race, Ethnicity, Payer, and Hospital

Edward L. Hannan, PhD,[a] Michael J. Racz, PhD,[b] Gary Walford, MD,[c] Alice K. Jacobs, MD,[d] Nicholas J. Stamato, MD,[e] Foster Gesten, MD,[f] Peter B. Berger, MD,[g] Samin Sharma, MD,[h] and Spencer B. King, III, MD[i]

[a] *Deptartment of Health Policy, Management and Behavior, University at Albany, State University of New York, Albany, New York, USA*

[b] *Department of Statistics, Albany College of Pharmacy, Albany, New York, USA*

[c] *Department of Cardiology, Johns Hopkins University, Baltimore, Maryland, USA*

[d] *Department of Cardiology, Boston Medical Center, Boston, Massachusetts, USA*

[e] *Department of Cardiology, Campbell County Memorial Hospital, Gillette, Wyoming, USA*

[f] *Office of Quality and Patient Safety, New York State Department of Health, Albany, New York, USA*

[g] *Department of Cardiology, North Shore Long Island Jewish Health Care System, Manhasset, New York, USA*

[h] *Department of Cardiology, Mt Sinai Medical Center, New York, New York, USA*

[i] *Department of Cardiology, St Joseph's Health System, Atlanta, Georgia, USA*

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ABSTRACT

Background: Many studies have shown that drug-eluting stents (DESs) are associated with better outcomes for patients receiving coronary stents, and earlier studies showed disparities in use by race and payer. It is of interest to know whether these differences persist in an era of higher use of DESs and to examine DES use differences across providers.

Methods: New York State's percutaneous coronary intervention registry was used to identify significant predictors of DES vs bare-metal stent use among patients receiving stents, including race, ethnicity, sex, payer, and numerous patient clinical risk factors in 2011-2012. Variations in DES use across hospitals and operators were also examined.

Results: African Americans (adjusted odds ratio [AOR], 0.70; 95% confidence interval [CI], 0.66-0.75) and Hispanics (AOR, 0.80; 95% CI,

RÉSUMÉ

Introduction : De nombreuses études sur les endoprothèses médicamentées ont démontré que ces dispositifs amélioraient les issues thérapeutiques chez les patients qui nécessitaient l'implantation d'un tel dispositif. Des études plus anciennes faisaient toutefois état de disparités en fonction de la race du patient et de la compagnie d'assurance. Nous voulions savoir si ces disparités étaient toujours présentes à une époque où l'on fait un usage beaucoup plus grand de tels dispositifs, en plus d'examiner les variations d'utilisation de ces dispositifs selon les fournisseurs.

Méthodes : Le registre des interventions coronariennes percutanées de l'État de New York pour les années 2011 et 2012 a été consulté afin de déterminer les prédicteurs significatifs, notamment la race, l'ethnie, le sexe, la compagnie d'assurance ainsi que divers facteurs de risque clinique, du recours aux endoprothèses médicamentées par

Randomized controlled trials and observational studies have documented lower clinical and angiographic restenosis, target-lesion revascularization, and major adverse cardiac event rates with drug-eluting stents (DESs) in comparison with bare-metal stents (BMSs).[1-17] Although there was a period during which DES use declined relative to BMS use because of concerns about late stent thrombosis,[18,19] continued efforts to reduce stent thrombosis and to improve the outcomes associated with DESs have led to the development of second-generation DESs, everolimus-eluting stents, and zotarolimus-eluting stents.[20-25]

There have also been several studies that have documented disparities in the use of DESs with regard to race, payer, and socioeconomic status.[26-32] It is an open question as to whether these disparities still exist and whether or not they are related to differences in the use of DESs among the

Received for publication December 10, 2015. Accepted January 7, 2016.

Corresponding author: Dr Edward L. Hannan, School of Public Health, State University of New York, University at Albany, One University Place, Rensselaer, New York, 12144-3456, USA. Tel.: +1-518-402-0333; fax: +1-518-402-0414.

E-mail: elh03@health.state.ny.us

See page 6 for disclosure information.

http://dx.doi.org/10.1016/j.cjca.2016.01.012

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0.74-0.85) were less likely to receive DESs than their counterparts. Patients with private insurance were more likely to receive DESs than patients in all other payer categories. More than one third of the 60 hospitals in the study had significantly lower adjusted use of DESs than the mean rate of 83%. For these hospitals, adjusted rates ranged from 52%-80%, and 5 of these hospitals had adjusted rates < 70%. Twenty-five percent of the total variation in the use of DESs was related to differences across hospitals that were unrelated to patient characteristics.

Conclusions: Disparities by race, ethnicity, and insurance status persist in the use of DESs among patients receiving coronary stents. There are also large differences in use among hospitals that are unrelated to patient clinical characteristics and demographics.

rapport aux endoprothèses non médicamentées. L'étude avait aussi pour but d'examiner les variations présentes entre les établissements et les exploitants.

Résultats : Il a été déterminé que les Afro-Américains (risque relatif ajusté [RRA] : 0,70; intervalle de confiance [IC] à 95 % : de 0,66 à 0,75) et les Hispaniques (RRA : 0,80; IC à 95 % : de 0,74 à 0,85) étaient moins susceptibles de recevoir une endoprothèse médicamentée que les patients des autres groupes. Les patients qui souscrivaient à une assurance privée étaient aussi plus susceptibles de recevoir une endoprothèse médicamentée que les patients couverts par d'autres compagnies d'assurance. En outre, plus d'un tiers des 60 hôpitaux présentaient un taux d'utilisation ajusté d'endoprothèses médicamentées significativement inférieur au taux moyen, lequel s'élevait à 83 %. Dans ces hôpitaux, le taux ajusté variait de 52 à 80 %, et dans 5 hôpitaux, le taux ajusté était < 70 %. Vingt-cinq pour cent de la variation totale entre hôpitaux concernant le taux d'utilisation d'endoprothèses médicamentées était liée à des différences qui n'avaient aucun lien avec les caractéristiques propres aux patients.

Conclusions : Il existe toujours des disparités en fonction de la race, de l'ethnie et de la couverture d'assurance en ce qui a trait au choix d'une endoprothèse médicamentée plutôt qu'à un autre type d'endoprothèse. Il existe aussi d'importantes variations entre hôpitaux qui n'ont aucun lien avec les caractéristiques cliniques et démographiques des patients.

hospitals and operators performing percutaneous coronary intervention (PCI).

The main purposes of this study were to (1) track changes in the use and choice of DESs in relation to BMSs; (2) to examine the factors associated with the use of DESs compared with BMSs, especially disparities with regard to race, ethnicity, payer, and sex; and (3) to assess the extent that differences in the use of DESs result from hospital practice pattern variation compared with patient characteristics. This study adds to the literature by looking at more recent data regarding disparities in the use of DESs and in examining the relative contribution of hospital practice pattern variation in comparison with patient characteristics.

Methods

End points and databases

The major end point in the study was the type of stent used in PCI. The primary database used for the study was New York State's clinical registry, the Percutaneous Coronary Interventions Reporting System (PCIRS), which contains detailed information on patient demographics, risk factors, hemodynamic state, left ventricular function, coronary vessels diseased and attempted repairs, complications, procedure choices, provider identifiers, discharge status, and in-hospital adverse outcomes. The registry also contains information on the type of device used for each attempted repair, including the type and brand of stent used.

Completeness of data reporting is monitored by matching PCIRS to New York's acute care hospital discharge database, the Statewide Planning and Research Cooperative system (SPARCS), and to the Department of Health's Ambulatory Surgery Database, and identifying any cases reported in those databases that were not reported in PCIRS. SPARCS contains patient demographics (age, sex, and race), diagnoses and procedures, admission and discharge dates, and discharge disposition for all patients discharged from nonfederal acute care hospitals in New York. SPARCS was also used to obtain information on payers.

Patients and hospitals

A total of 97,433 patients was discharged between January 01, 2011 and December 31, 2012 after having undergone PCI in nonfederal hospitals in New York State. We excluded patients whose PCI device was neither a DES nor a BMS (7085 [7.3%]). We also excluded 5714 cases that could not be matched to SPARCS. The other 84,634 patients (those receiving BMSs and DESs) were used to study factors associated with the use of DESs. The majority of these patients (n = 70,374 [83.2%]) received DESs with or without a BMS, and 64,272 (91.3%) of the patients receiving DESs received a second-generation DES. The number of hospitals in which these patients underwent PCI during this period was 60, and the number of operators performing these procedures was 409.

Statistical analysis

Univariate relationships between DES use and various patient characteristics were examined using χ^2 tests. A hierarchical logistic regression model was used to identify demographics and other patient-related variables that are independently associated with the use of DESs vs BMSs among patients receiving stents. The dependent variable was the use of DESs among patients receiving stents, regardless of whether a BMS was also used. Each hospital in the study was treated as a second-level random effect to assess the impact of individual hospital variations on the use of DESs. The relative impact of patient-level variables vs hospital practice was assessed using the intraclass correlation coefficient. Quartiles

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