Road map fusion imaging in PCI reduces contrast medium exposure irrespective of investigator’s experience level

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Funding Acknowledgements: Type of funding sources: Public hospital(s). Main funding source(s): University Hospital Düsseldorf, Medical Faculty, Heinrich-Heine University Düsseldorf
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Background/Introduction: Dynamic Coronary Roadmap (DCR) is a software tool that creates a real-time dynamic coronary artery overlay on the fluoroscopic image. Its efficacy in significantly reducing contrast medium use during percutaneous coronary interventions (PCI) has already been shown.

Purpose: The purpose of this study is to investigate whether the positive effects of DCR persist irrespective of the investigator’s experience level.

Methods: In this sub-analysis of a monocentric, open-label, randomized trial, 130 patients with hemodynamically relevant coronary type A and B lesions were randomized (1:1 ratio) and conducted with or without DCR software. PCI was randomly allocated and performed by an investigator with high (A) or medium (B) experience level.

Results: Overall, the primary endpoint contrast medium use was significantly reduced by both investigators in the +DCR group (Investigator A: −DCR 68.62 +/- 23.86ml vs. +DCR 43.39 +/- 21.91ml; Investigator B: −DCR 70.80 +/- 31.77ml vs. +DCR 29.46 +/- 12.26ml, p < 0.0001). With the software, Investigator B used significantly less contrast medium than Investigator A (p = 0.0468). The DCR software is not accompanied by increased radiation exposure for the patients or the teams. On the contrary, the dose area product was reduced by both investigators but was significantly reduced with DCR in the highly experienced investigator (Investigator A: −DCR 2415.25 +/- 1413.30 cGycm² vs. +DCR 1727.17 +/- 1148.69 cGycm², p = 0.0284). Fluoroscopy time was not different between investigators. Procedural success was 100%. Serious in-hospital adverse events were not observed. One patient of Investigator A suffered from post-procedural acute kidney injury in the −DCR group.

Conclusion(s): DCR significantly reduces contrast medium use during PCI irrespective of the investigator’s experience level. Efficacy and safety do not differ between investigators’ experience levels. Whether these excellent results can also be translated into more complex lesion settings has to be evaluated in future trials.

Operating principle of DCR
Primary and secondary endpoints