

To identify risk factors and interventions preventing or reducing contrast medium extravasation” Ding et al (2018).

Abstract:

OBJECTIVE: To identify risk factors and interventions preventing or reducing contrast medium extravasation.

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INTRODUCTION: Computed tomography (CT) is a radiological examination essential for the diagnosis and monitoring of many diseases. It is often performed with the intravenous (IV) injection of contrast agents. Use of these products can result in a significant complication, extravasation, which is the accidental leakage of IV material into the surrounding tissue. Patients may feel a sharp pain and skin ulceration or necrosis may develop.

INCLUSION CRITERIA: This review considered studies that included patients (adults and children) undergoing a CT with IV administration of contrast media. The risk factors considered were patient demographics, comorbidities and medication history. This review also investigated any strategies related to: contrast agent, injection per se, material used for injection, apparatus used, healthcare professionals involved, and patient risk assessment performed by the radiology personnel. The comparators were other interventions or usual care. This review investigated randomized controlled trials and non-randomized controlled trials. When neither of these were available, other study designs, such as prospective and retrospective cohort studies, case-control studies and case series, were considered for inclusion. Primary outcomes considered were: extravasation frequency, volume, severity and complications.

METHODS: The databases PubMed, CINAHL, Embase, the Cochrane Register of Controlled Trials, Web of Science PsycINFO, ProQuest Dissertations and Theses A&I, TRIP Database and ClinicalTrials.gov were searched to find both published and unpublished studies from 1980 to September 2016. Papers were assessed by two independent reviewers for methodological validity using the Joanna Briggs Institute System for the Unified

Management, Assessment and Review of Information (JBI SUMARI). Data were extracted using the standardized data extraction tool from JBI SUMARI. In one case, quantitative data from two cohort studies were pooled in a statistical meta-analysis. However, generally, statistical pooling was not possible due to heterogeneity of the interventions, populations of interest or outcomes. Accordingly, the findings have been presented in narrative form.

RESULTS: Fifteen articles were selected from a total of 2151 unique studies identified. Two were randomized controlled trials and 13 were quasi-experimental and observational studies. The quality of these studies was judged to be low to moderate. Some patient characteristics, such as female sex and inpatient status, appeared to be risk factors for extravasation. Additionally, injection rate, venous access site and catheter dwelling time could affect the volume extravasated. Preliminary studies seemed to indicate the potential of extravasation detection accessories to identify extravasation and reduce the volume extravasated. The other interventions either did not result in significant reduction in the frequency/volume of extravasation, or the results were mixed across the studies.

CONCLUSIONS: The majority of the studies included in this review evaluated the outcomes of extravasation frequency and volume. Given the quality of the primary studies, this systematic review identified only potential risk factors and interventions. It further highlighted the research gap in this area and the importance of conducting trials with solid methodological designs.

Full Text

Reference:

Ding, S., Meystre, N.R., Campeanu, C. and Gullo, G. (2018) Contrast media extravasations in patients undergoing computerized tomography scanning: a systematic review and meta-analysis of risk factors and interventions. 16(1), p.87-116.

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