The effectiveness of interventions to prevent or reduce Contrast Media Extravasations among patients undergoing computerised tomography scanning: a systematic review protocol

Review question/objective

The primary objective of the review is to identify the effectiveness of interventions to prevent or reduce contrast medium extravasation in patients undergoing Computerised Tomographic (CT) examination. The specific review question is: What is the effectiveness of methods to prevent or reduce Contrast Media Extravasations among patients undergoing computerised tomography scanning?

Inclusion criteria

Types of participants

This review will consider studies that included patients (adults or children), undergoing a CT examination, for any indication and of any part of the body, and requiring use of an IV administration of contrast media material. The examination can be either a classical CT or an interventional radiology CT procedure. The participants may be either inpatients or ambulatory care patients.

This review will not consider studies investigating extravasations in the framework of chemotherapy, anaesthesiology or parenteral nutrition. Indeed, the products used present a very different composition and thus different properties (e.g. viscosity and toxicity) compared to contrast media.

Types of intervention(s)/phenomena of interest

This review will consider studies that evaluated interventions which may prevent extravasation of contrast media or reduce its severity. Accordingly, it will include any strategies, related to:

- The contrast agent (volume, concentration, viscosity, temperature)
- The injection per se (patient injection site, preparation room)
- The material used for injection (catheter gauge, cannulas, butterfly, venflon)
- The apparatus used (detection device: ultrasound, radiofrequency),
- The healthcare professionals (profession, skills)
- The patient risk assessment by the radiology personnel (medication, morbidity, language).

The comparators of this study will be either other interventions, such as a different contrast agent, another cannula, or usual care, such as the absence of preparation room or detection device.

Types of outcomes

This review will consider studies that include the primary and secondary outcomes described below.

Primary patient outcomes will include:

- Extravasation frequency
- Extravasation volume
- Extravasation severity, including inflammatory reactions, necrosis, pain
- Complications, including plastic surgery and amputation.

Secondary outcome measures will include:

- Diagnostic value and accuracy
- Workflow
- False positive detection of extravasation. This outcome is particular to the interventions using detection device.

Research team

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