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REVIEW

Selective embolisation for intractable bladder haemorrhages: A systematic review of the literature

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KEYWORDS

Intractable bladder haemorrhage (IBH);
Selective transarterial embolisation (STE);
Conservative treatment;
Urinary tract infection (UTIs)

ABBREVIATIONS

IBH, intractable bladder haemorrhage;

Abstract ***Objective:*** To establish the current evidence and assess the effectiveness and safety of selective transarterial embolisation (STE) to control intractable bladder haemorrhage (IBH).

Materials and methods: With a rise in the use of STE for the treatment of IBH, a systematic review was performed according to the Cochrane reviews guidelines and in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.

Results: The literature search yielded 38 studies, of which 11 were excluded because of irrelevance of data. All included studies were observational cohort studies, with no randomisation or control groups apart from in relation to the materials used for embolisation. The studies were published between 1978 and 2016. There were 295 patients with an age range between 51 and 95 years. The success rate ranged from 43% up to 100%. The most reported complication was post-embolisation syndrome, although

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MeSH, Medical Subject Headings; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; STE, selective transarterial embolisation

other complications were described such as mild transient gluteal claudication, nausea, and vomiting.

Conclusion: STE of the internal iliac artery is a safe and effective alternative technique to control severe IBH, and has been successfully applied over many years to treat bladder haemorrhage associated with terminal pelvic malignancy.

Introduction

Intractable bladder haemorrhage (IBH) is a rare urological emergency that can potentially be life-threatening and its management difficult. It is a comorbid serious condition and associated with increased admissions and transfusions. IBH can arise as a result of radiation cystitis, bladder carcinoma, cyclophosphamide-induced cystitis, severe infection, or locally advanced prostate cancer [1–3].

The management of IBH is difficult and may necessitate interventional radiology to embolise main vessels to stop the bleeding. Selective transarterial embolisation (STE) of the internal iliac artery is a palliative measure to control bleeding. Numerous studies have shown the STE leads to a cessation of bleeding with low associated morbidity [1–3].

Despite the reported success, the only available evidence for STE has been case series. To this end, we aimed to conduct a systematic review of the literature to establish the current evidence and assess the effectiveness and safety of STE to control IBH.

Materials and methods

Search strategy and study selection

The systematic review was performed according to the Cochrane reviews guidelines and in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist [4].

The search strategy was conducted to find relevant studies from Medline (1966–2017), EMBASE (1980–2017), Google Scholar and individual urological journals. The search was conducted in April 2017.

The search terms used included: 'bladder', 'cystitis', 'haemorrhage', and 'bleeding', 'embolisation' and 'haematuria'. The Medical Subject Headings (MeSH) phrases included: ('Urinary Bladder' [MeSH]) AND 'Haemorrhage' [MeSH]).

(('Urinary Bladder' [MeSH]) AND 'Haemorrhage' [MeSH]) AND 'Embolization, Therapeutic' [MeSH]).

(((('Urinary Bladder' [MeSH]) AND 'Haemorrhage' [MeSH]) AND 'Embolization, Therapeutic' [MeSH]) AND 'Arteries' [MeSH].

All papers irrespective of language were included if they reported on STE. The references of the identified papers were evaluated for potential inclusion. Authors of the included studies were contacted whenever the data were not available or not clear.

Two reviewers (D.E.T. and O.A.A.) identified all the studies that adhered to the inclusion criteria for full review. Each reviewer independently selected studies for inclusion. Disagreement between the extracting authors was resolved by consensus or referred to the third author (A.A.S.).

Data extraction and analysis

The objectives were to evaluate the effectiveness and safety of STE for IBH. The following variables were extracted from each study: patient demographics, blood loss, transfusion rates, duration of hospital stay, procedure success rate to stop bleeding, and complications that were classified according the Clavien–Dindo classification system [5]. The data from each study were grouped into a meta-analysis, in an intention-to-treat basis, to allow a numerical representation of the results.

Results

The literature search yielded 38 studies, of which 11 were excluded because of the irrelevance of the data (Fig. 1). The titles and abstracts of the studies did not give sufficient data on IBH; hence, their exclusion.

Full manuscripts were evaluated in 11 of 27 studies that were included in the review [1,6–15]. All included studies were observational cohort studies, with no randomisation or control groups, apart from in relation to the materials used for embolisation and reported on IBH. Three studies were case reports [16–18].

All studies that reported on the variables indicated in the data extraction section are shown in Table 1.

Characteristics of the included studies

The studies were published between 1978 and 2016. There were 295 patients, with an age range between 51 and 95 years.