

Anaphylactoid Reactions to Iodinated Contrast Media During Videourodynamics

January 16th 2008

Dear Professor Chapple,

We wish to report the results of a retrospective review of a series of videourodynamic procedures, with respect to the risk of anaphylactoid reactions. Anaphylactoid reaction is a recognised complication of intravenous administration of radiographic contrast media. Immediate severe reactions can lead to laryngeal oedema, hypotension, and very rarely even death. The mechanism is not well characterised, but may involve IgE mediated, complement mediated, and cell mediated components. Retrograde urography, as used in videourodynamics is usually considered to be a safe alternative to intravenous urography. There are infrequent case reports of anaphylactoid reactions occurring during retrograde urography, and particularly retrograde pyelography. On the basis of two cases occurring during a series of 783 cystourethrograms and retrograde pyelograms, the risk of severe anaphylactoid reactions is sometimes quoted as 0.26%.^{1,2}

Over a 10-year period we collected information about adverse events occurring during videourodynamics in our tertiary referral centre. We employ fluoroscopy routinely at the time of urodynamics. We use it in the initial evaluation of women with symptoms of stress, urge, or mixed incontinence, as well as for women with urgency without leakage, voiding difficulties, and recurrent urinary tract infection. When considering surgery we also employ it for the evaluation of anterior vaginal wall, uterine and vault prolapse. In addition, we use it to assess objective cure in all patients, at 6-month follow-up after any continence surgery. Women who are pregnant, or who have a history of anaphylactoid reaction to IV infusion of iodinated contrast medium are excluded from the procedure. These women undergo urodynamics with saline instead, and are not included in this series. During cystometry the bladder is filled at 50 ml/min, at a pressure not exceeding 150 cmH₂O, with room temperature contrast medium, either Omnipaque 140 mg I/ml, or Urografin-370 diluted to 92.5 mg I/ml with normal saline. Filling proceeds to 500 ml or maximum cystometric capacity, determined by the patient reporting strong desire to void. Contrast remains within the bladder for less than 30 min.

Between January 1997 and January 2007 we performed 11,714 videourodynamic studies. Nine thousand one hundred forty eight procedures utilised Omnipaque 140 mg I/ml, and 2,566 utilised dilute Urografin-370. There was a single anaphylactic reaction, due to an unsuspected latex allergy, occurring before administration of contrast. There were no severe adverse reactions due to contrast. In our population the

apparent risk of an anaphylactoid reaction due to contrast is therefore less than 0.01%.

Almost all reported cases of contrast reactions during retrograde urography occur either during pyelography, or when Grade II or above vesicoureteric reflux has been observed during cystourethrography. This corroborates previous work suggesting that the urothelium forms an effective barrier against contrast absorption, whereas the renal pelvices may allow small quantities of contrast to enter the circulation.³ In our population of adult women, Grade II or above vesicoureteric reflux is an uncommon finding, seen in approximately 0.5% of patients, and this may have a direct bearing on the rate of reactions. In the absence of vesicoureteric reflux, a reaction may still be possible if extravasation of contrast occurs following an injury to the urothelium.

For a majority of patients in our series we used Omnipaque 140 mg I/ml, a low osmolality non-ionic contrast medium. With intravenous administration these are associated with a lower rate of severe reactions than conventional high osmolar ionic agents (0.04% vs. 0.22%).⁴ For the other patients we did use a high osmolar ionic agent, Urografin-370, but diluted to 92.5 mg I/ml with saline. In our experience this dilution provides more than adequate resolution for fluoroscopic imaging, but might also have had some protective benefit in the event of systemic absorption.

In this series, women with a history of severe reaction to contrast were excluded from the procedure. Systemic contrast reactions recur in 8–25% of patients, so that a history of a previous severe reaction doubles the risk of severe reaction in a future study.⁵ The low rate of anaphylactoid reactions observed in this series should therefore provide helpful information in counselling women with a history of reaction to intravenous contrast when considering retrograde cystourethrography. We did not however record data about less severe reactions, or possible delayed reactions.

Yours sincerely,

There are no financial or ethical conflicts of interest for any authors.

All authors contributed to the design of the study, data collection, and preparation of the manuscript.

Ethical approval was not required. The data were collected during normal clinical practice as a requirement of risk management.

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