

'A re-audit of radiologists knowledge of Royal College of Radiologists current recommendations on the management of mild to severe contrast medium reactions'

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Introduction

- Hypersensitivity reactions to iodinated contrast media are relatively common and range from mild, to life-threatening anaphylaxis
- Mild contrast reactions affect <1/100 of patients, and may cause nausea and vomiting, pruritis, flushing and urticaria¹
- Severe contrast media reactions are rare, and affect <1/100,000 patients. Symptoms may include hypovolaemic shock, respiratory and cardiac arrest, and convulsions¹
- Anaphylaxis is the cause of death of approximately 20 patients per annum in the United Kingdom. 9 deaths between the years of 1992 - 2001 were attributed to iodinated contrast media²
- Healthcare professionals involved in the administration of contrast media should be trained in the recognition and initial management of contrast media reactions
- Royal College of Radiologists (RCR) guidance states that staff should be aware of the management of mild -severe contrast reactions as laid out in the 2016 RANZCR Iodinated Contrast Guidelines^{3,4}

Results

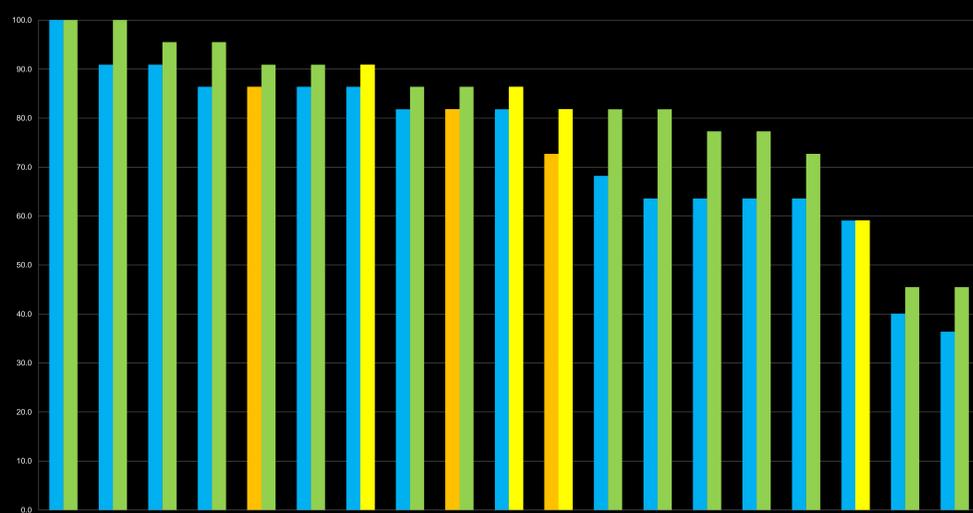


Figure 1 - Marks attained by consultants and registrars.
Blue = consultant marks in 1st audit; green = consultant marks from re-audit.
Orange = registrar marks in 1st audit; yellow = registrar marks from re-audit.

- Average results improved from a mean total score of 74% to 81% on re-audit
- Mean Consultant score improved from 72% to 82%
- The total scores improved from a range of 36.3 - 100% to a range of 41.2% - 100%
- 10.5% failed to recognise intramuscular adrenaline as an appropriate intervention in anaphylaxis (falling further to 15.8% in the re-audit)
- 15.8% incorrectly recognised intravenous adrenaline as an appropriate intervention in anaphylaxis (improving to 10.5% in the re-audit)
- 31.6% incorrectly recognised gelofusine as an appropriate intervention in anaphylaxis (worsening to 36.8% on re-audit), although 73.7% correctly recognised normal saline as an appropriate intervention (improving to 94.7% on re-audit)
- The question most frequently answered incorrectly was the same in both audits: only 47.4% correctly identified IV atropine as a drug used in the context of severe vasovagal reaction (improving to 57.9% upon re-audit)
- The question most frequently answered correctly was also the same in both audits: 100% identified adrenaline as an inappropriate treatment for a mild contrast reaction

Methods

- Staff knowledge of contrast media reactions was assessed using a questionnaire from RCR's Audit Live template, with a target total of 100% of questions answered correctly
- This questionnaire consisted of 22 'true or false' questions subdivided amongst 4 primary question stems. Topics covered included:
 - Doses and routes of administration of key drugs, including adrenaline, atropine, chlorphenamine and intravenous fluids
 - Scenarios involving administration of Adrenaline (1/1000), Atropine, and H1 Blockers
- Radiology Consultants and Registrars working at the Royal United Hospitals Bath in Spring 2019 completed the questionnaire under supervision. Results were anonymised and analysed in Microsoft Excel
- Following analysis of the results, the correct answers were disseminated at the departmental audit meeting
- Dedicated anaphylaxis teaching was arranged with the Trust Resuscitation team to refresh anaphylaxis management and address any significant knowledge gaps
- Subsequent re-audit was performed in Spring 2020, with the same questionnaire
- Results were again anonymised and re-analysed, with comparison made to the results of the original audit

Discussion

- Staff knowledge of anaphylaxis demonstrated an overall improvement following initial audit and training by the resuscitation team, although still fell short of the overall target of 100%
- Whilst the majority of questions were generally answered well, a small number of respondents were unclear on some core aspects of anaphylaxis management, including the route of administration of adrenaline, and the role of colloids
- There is limited awareness as to the role of atropine in acute anaphylaxis (which is indicated for the treatment of severe vasovagal reactions involving both hypotension and bradycardia)
- The vast majority of respondents felt that further teaching on the topic would be more helpful
- Dedicated anaphylaxis scenario-based training has been arranged for our department
- Annual online e-learning refreshers for Consultants and coverage of the topic during induction for new registrars may be means by which this could be achieved

References:

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2. Emergency treatment of anaphylactic reactions Resuscitation Council (UK) 2008 <https://www.resus.org.uk/anaphylaxis/emergency-treatment-of-anaphylactic-reactions>
3. The Royal Australian and New Zealand College of Radiologists. Iodinated Contrast Media Guideline. 2018. Available from: <https://www.ranzcr.com/search/ranzcr-iodinated-contrast-guidelines> [accessed 12th Oct 2020]
4. The Royal College of Radiologists. Audit of Staff knowledge of Royal College of Radiologists current recommendations on the management of mild to severe contrast reactions. Available from <https://www.rcr.ac.uk/audit/audit-staff-knowledge-royal-college-radiologists-current-recommendations-management-mild> (accessed 12th Oct 2020)