

A Survey of Radiologists at LVHN on IV Contrast Reactions and Usage

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A Survey of Radiologists at LVHN on IV Contrast Reactions and Usage

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Background

- Intravenous iodinated contrast media (ICM) is regularly used in CT scans to aid in diagnosis but can produce allergic-like reactions or contrast-induced nephropathy
- Allergic-like reactions range from urticaria and pruritus to anaphylaxis, and CIN manifests as acute kidney injury (AKI) caused by ICM. However, prevention and treatment of these reactions are still incompletely understood¹
- The American College of Radiology (ACR) publishes guidelines on ICM reactions, but studies have shown practices may differ significantly from these guidelines^{2,3}
- Providers at LVHN have developed a new clinical protocol based upon ACR guidelines, and the goal of this study is to survey network radiologists on their current practices, knowledge of reactions, and familiarity with guidelines in order to assess areas for improvement prior to its implementation

Problem Statement

Due to a lack of conclusive data, knowledge and practices regarding intravenous contrast usage vary significantly and often do not adhere to current guidelines.

Methods

- A 15-question survey was created with the Google Forms online platform and emailed to all radiologists at LVHN (77, excluding the survey's creator)
- Questions focused on one or more of the following categories: knowledge on contrast reactions, familiarity with and access to current guidelines, and communication with other providers
- No free-response questions were included
- The survey was distributed on January 6, 2019 and all responses gathered by February 15, 2019
- Results were gathered within Google Forms as tables and charts for individual questions. No statistical analysis was performed, and respondent demographics were not assessed
- The survey is planned to be repeated 1-3 months following the protocol's implementation to assess for changes, however this is beyond the timeline of this paper

Results

- Most questions received 32 responses (32/77, 42%) while two received 30, marked with *
- Table 1 shows all questions and responses
- Questions and responses have been abbreviated, correct responses underlined, and most frequent responses bolded

Table 1. Survey Questions and Responses

Question	Choices and Response Rate (%)							
1) Easy access to department policies on contrast?	Yes (34.4%)	No (21.9%)	Unsure (43.8%)					
2) Do you know where to find latest guidelines?	Yes (37.5%)	No (62.5%)						
3) Reviewed department policies within past 6 months?	Yes (21.9%)	No (78.1%)	Unsure (0%)					
4) Comfort level answering questions on oral and IV contrast?	1 (Least) (0%)	2 (6.3%)	3 (18.8%)	4 (56.3%)	5 (Most) (18.8%)			
5) Change in frequency of questions on contrast in past 3 months?*	Significant decrease (0%)	Slight decrease (6.7%)	No change (86.7%)	Slight increase (3.3%)	Significant increase (3.3%)			
6) Change in comfort answering questions on oral and IV contrast in past 3 months?	Much less comfortable (6.7%)	A little less (0%)	No difference (80%)	A little more (10%)	Much more (6.7%)			
7) Have you read 2018 ACR contrast manual?	Yes (40.6%)		No (59.4%)					
8) Types of questions received?	Dose of contrast (46.9%)	Type of agent (43.8%)	Need for hydration (43.8%)	Allergic-like reactions (66.8%)	Need for premedication (75%)	Need for bloodwork (40.6%)	Other (21.9%)	Rarely asked (9.4%)
9) Types of contrast used at LVHN?	High osmolar (6.3%)	Low osmolar (90.6%)		Iso osmolar (62.5%)				
10) Which of following is indication for steroid premedication?	Prior physiologic reaction such as nausea or vomiting (0%)	Betadine allergy (0%)	Prior reaction to gadolinium (6.3%)	Prior reaction to same class of contrast (93.8%)		Shellfish allergy (0%)		
11) Greatest effect in reducing CIN risk?	Decrease volume of IV contrast (25%)	Volume expansion (50%)		Use of iso osmolar instead of low osmolar contrast (21.9%)	Administer N-acetylcysteine (3.1%)			
12) Cutoff eGFR value above which patient does not need to discontinue metformin?	15 (0%)	30 (25%)	45 (21.9%)	60 (53.1%)				
13) All of following indication for renal function labs within last 60 days EXCEPT?	Age greater than 60 years (9.4%)	Diabetes mellitus (0%)	Prior administration of IV contrast within 24 hours (46.9%)		Hypertension requiring medical therapy (31.3%)	Prior kidney surgery (12.5%)		
14) True or False: eGFR better marker for CIN than creatinine.	True (96.9%)			False (3.1%)				
15) Rate of severe allergic-like reaction in absence of prior allergy history?	0.04% (62.5%)	0.4% (34.4%)	4% (3.1%)	10% (0%)				

Discussion

- Only 34.4% of respondents reported easy access to departmental policies, and 78.1% had not reviewed them in the past 6 months
- 62.5% did not know where to find updated guidelines, and 59.4% had not read the latest (at time of survey) ACR contrast manual
- Most felt comfortable answering questions (75.1% answered 4 or 5), while neither frequency nor comfort level changed in past 3 months
- Questions on premedication were most common, however all were relatively common ($\geq 40\%$)
- 37.5% did not correctly identify iso osmolar as a contrast media used at LVHN
- Over 90% of respondents correctly identified indications for steroid premedication
- However, only 50% correctly identified volume expansion as the greatest risk mitigator for CIN
- ACR guidelines differ from others for Question 12, so multiple answers may be considered^{1,4}
- Relation to SELECT: aim for quality improvement for contrast usage at LVHN, emphasize patient safety
- Limitations: scope and number of questions, lack of demographics, differing guidelines, lack of statistical analysis

Conclusions

- Network radiologists reported difficulty in accessing both departmental and published guidelines, and most had not recently reviewed them
- However, most felt comfortable answering questions about contrast reactions
- Knowledge of contrast reactions varied based on question and subject matter, and topics with more incorrect responses could be targets for improved education
- Implementation of the new contrast protocol at LVHN could focus on accessibility and awareness in order to improve familiarity and standardize network practices
- Education can be utilized to help improve knowledge on CIN and allergic-like reactions

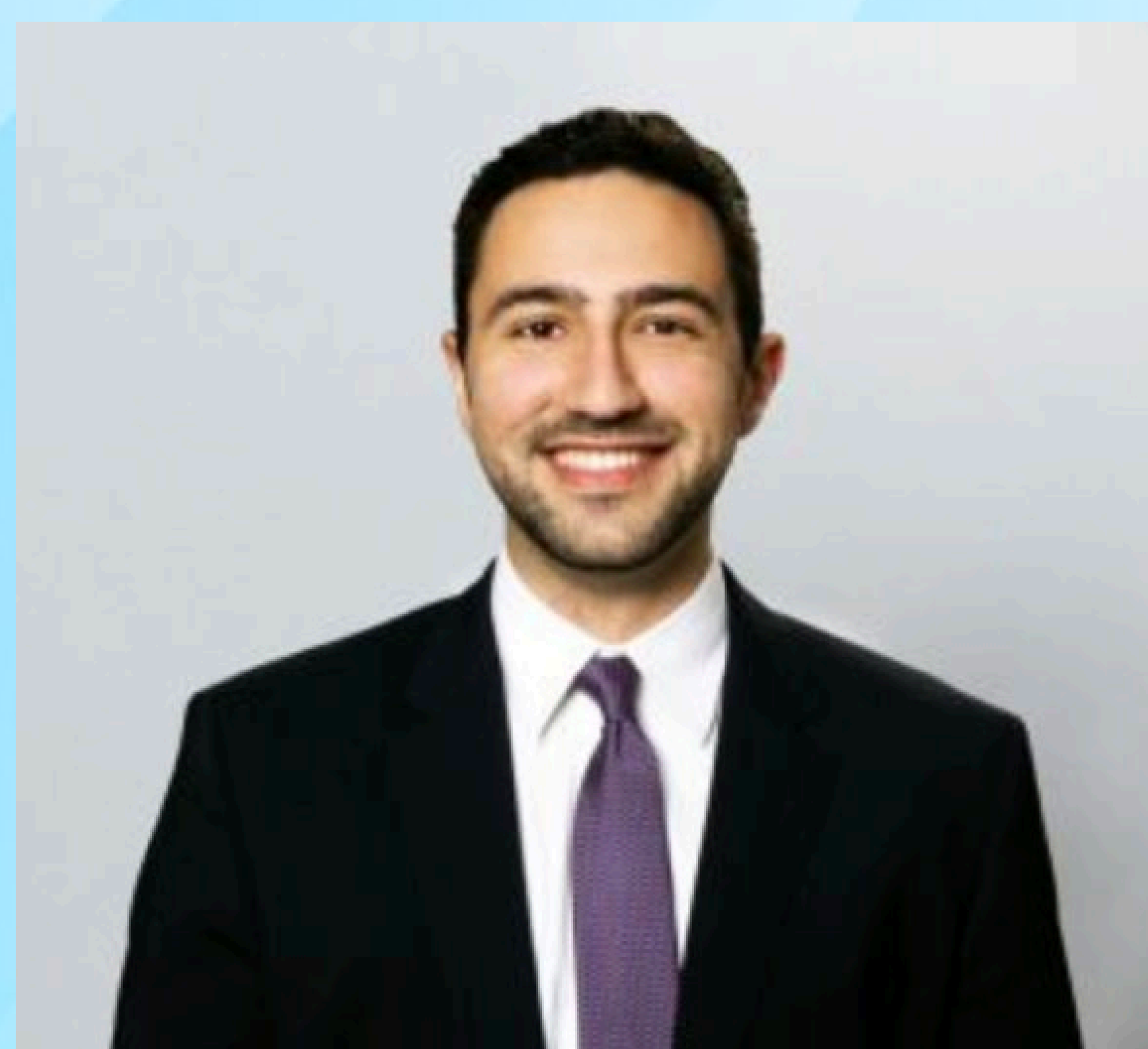
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