

Effective Reporting in Cardiac CT Angiography: Improvement via Collaborative Peer Review

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Background

Incidental Findings at Coronary CTA

Coronary CT angiography (CTA) demands familiarity with incidental findings and their implications, and at our institution is a collaborative effort between cardiologists and radiologists.

Readers are responsible for all cases on a given day. Radiology fellows and attendings are always available to assist cardiology colleagues, when consulted.

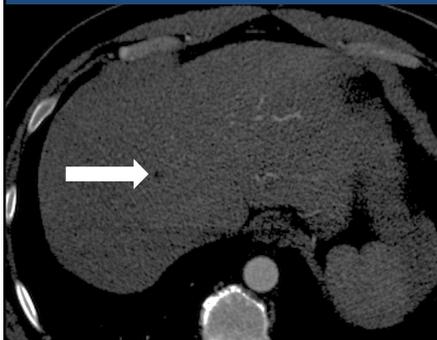
Incidental Findings at Coronary CTA

When incidental findings do require followup, it is the duty of the radiologist to clearly recommend a next step.

4. Impression (conclusion or diagnosis)

- a. Unless the report is brief, each report should contain an "impression" section.
- b. A specific diagnosis should be given when possible.
- c. A differential diagnosis should be rendered when appropriate.
- d. Follow-up or additional diagnostic studies to clarify or confirm the impression should be suggested when appropriate.
- e. Any significant patient rejection should be reported.

ACR Practice Guideline for Communication of Diagnostic Imaging Findings, 2010



This incidental liver finding was dictated by a nonradiologist as a "low-attenuation indeterminate lesion in the right hepatic lobe. Recommend hepatic ultrasound for further characterization." Ultrasound of the abdomen found no focal liver lesion. However, due to the limited sensitivity of ultrasound for detection of focal liver lesion, an MRI of liver was considered.

Group peer review

Our institution recently developed a mandatory biweekly collaborative group peer review process, implemented across the entire department.

Group peer review process Overview

Cardiac imaging attending readers in attendance are selected

Report selection from attendees recent cases are randomly selected and reports anonymized

Collaborative peer review session on a PACS monitor/projector

Web-based results of peer review are recorded anonymously, stored and distributed as necessary

Cardiac imaging attending readers

At our site, reading days (cardiac MR and CT) is evenly distributed between cardiologists and radiologists in our institution.

Report selection

Attending readers are required to participate in 2% of report reviews (MR and CT).

Only the effect of peer review on cardiac CTA reporting was analyzed in this study.

We did not review the result of the specific cases selected for peer review, but rather the overall changes in recommendation rates on our Cardiac CT service.

Collaboratively peer review session

At least 3 attending readers must be present.

Consensus agreement on:

- The report is acceptable/ should be changed, or no consensus is reached
- Does the report describe a finding which requires non-routine communication to the patient's physicians (Yes/No/ No consensus)

Web-based engine drives conference, anonymizes reports, records responses.

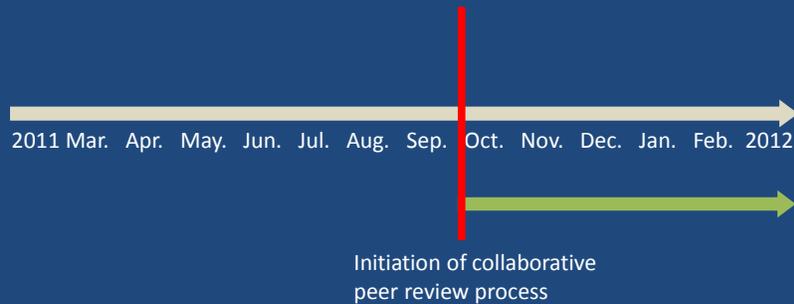
Objectives

In this study, we sought to evaluate changes in cardiac CT angiography reporting, specifically with respect to recommendations in official reports, since the initiation of peer review conferences.

Methods

Cohort

We retrospectively examined all cardiac CTA reports over a 12 month period.



Analysis

We measured the rate and type of recommendations before and after peer review was initiated, per specialty.



Specialty of attending reader

- Cardiology
- Radiology

Recommendation

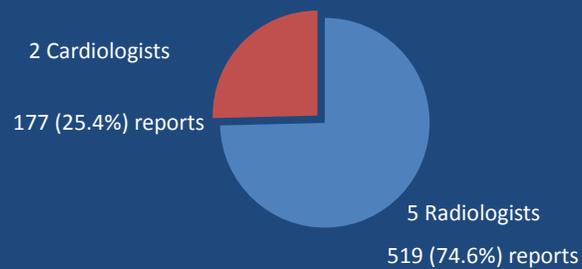
- No recommendation
- Recommendation made
- content by organ system

Results

A total of 696 CTA reports were included in the analysis (this comprised all reports during the study period). All attending CT readers had undergone subspecialty fellowship training in cardiac CT and > 1 year of staff experience).

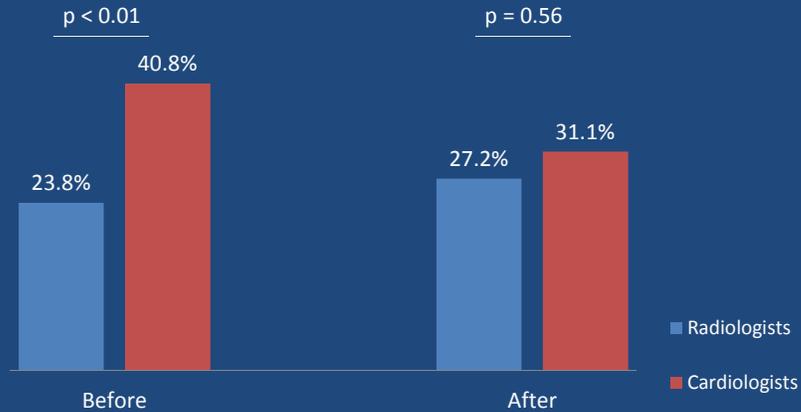


Distribution of reports by specialty

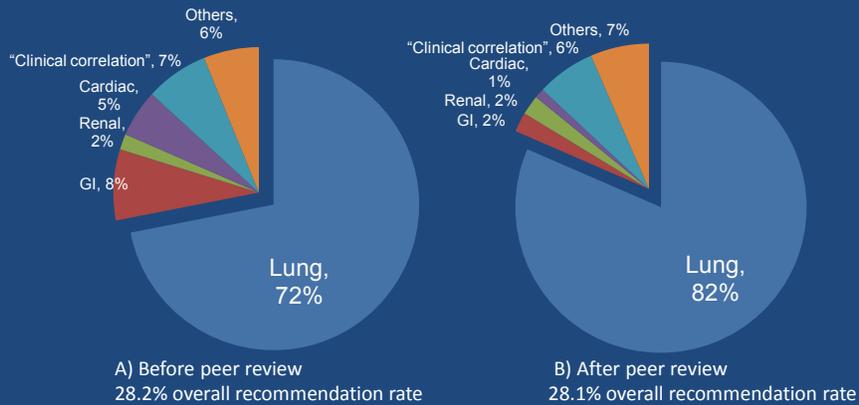


Recommendation rate

The recommendation rate differed significantly between radiologists and cardiologists. However, this difference decreased after the initiation of the peer review process.



Content distribution



The proportions of recommendation by type remained similar before and after, with lung finding follow-up comprising the majority.

Discussion

Discussion

Cardiac CTA continues to evolve rapidly as a shared subspecialty. While general diagnostic radiology training covers the management of incidental findings in all body parts, general cardiology training does not cover this subject.

The use of a collaborative peer review resulted in significant decreases in the number of recommendations resulting from incidental findings reported by cardiologists, particularly in non-lung findings.

This likely reflects the high prevalence of lung nodules, and the fact that our department had a well-publicized lung nodule follow-up algorithm in place for several years before this study.

Because other, more rare findings (i.e. liver pathology) decreased, we presume this was a positive effect of peer review.

Conclusion

A collaborative peer review process provides an opportunity to facilitate clinical knowledge exchange and standardize reporting.

This is especially important for cardiac CTA and may decrease unnecessary recommendations and downstream testing.

References

1. Jaklitsch MT, Jacobson FL, Austin JHM, et al. The American Association for Thoracic Surgery guidelines for lung cancer screening using low-dose computed tomography scans for lung cancer survivors and other high-risk groups. *The Journal of Thoracic and Cardiovascular Surgery*. 2012;144(1):33-38.
2. Mueller J, Jeudy J, Poston R, White CS. Cardiac CT angiography after coronary bypass surgery: prevalence of incidental findings. *American Journal of Roentgenology*. 2007;189(2):414-419.
3. Hopper K, Rosetti G, Edmiston R, et al. Diagnostic radiology peer review: a method inclusive of all interpreters of radiographic examinations regardless of specialty. *Radiology*. 1991;180(2):557-561.
4. Budoff MJ, Fischer H, Gopal A. Incidental findings with cardiac CT evaluation—Should we read beyond the heart? *Catheterization and cardiovascular interventions*. 2006;68(6):965-973.
5. MacHaalany J, Yam Y, Ruddy TD, et al. Potential clinical and economic consequences of noncardiac incidental findings on cardiac computed tomography. *Journal of the American College of Cardiology*. 2009;54(16):1533-1541.
6. Maitino AJ, Levin DC, Parker L, Rao VM, Sunshine JH. Practice Patterns of Radiologists and Nonradiologists in Utilization of Noninvasive Diagnostic Imaging among the Medicare Population 1993–1999. *Radiology*. 2003;228(3):795-801.
7. Lehman SJ, Abbara S, Cury RC, et al. Significance of cardiac computed tomography incidental findings in acute chest pain. *The American journal of medicine*. 2009;122(6):543-549.

