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Educational Impact of Trainee-Facilitated Head and Neck Radiology–Pathology Correlation Conferences

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Abstract
The goal of this study was to evaluate the benefits of resident and fellow-facilitated radiology–pathology head and neck conferences. A total of seven resident-facilitated and six fellow-facilitated head and neck radiology–pathology cases were presented as part of the radiology department conference series. The radiology residents were surveyed regarding the perceived quality and effectiveness of the fellow-facilitated sessions. The number of publications yielded from all the cases presented was tracked. Overall, the residents assessed the quality of the fellow-facilitated conferences with an average score of 3.9 out of 5 and the overall helpfulness with an average of 3.5 out of 5. The overall average level of resident understanding among the residents for the topics presented to them by the fellows at baseline was 2.5 out of 5 and 3.4 out of 5 after the presentations, which was a significant increase (p-value < 0.01). There were three peer-reviewed publications generated from the resident presentations and four peer-reviewed publications generated from the fellow presentations, which represents a 54% publication rate collectively. Therefore, trainee-facilitated head and neck radiology–pathology conferences at our institution provide added learning and scholarly activity opportunities.

Keywords Head and neck · Radiology · Pathology · Education · Conference

Introduction

Both pathology and radiology are frequently essential for making correct diagnoses and guiding appropriate patient management, yet the radiology and pathology workflows and instruction are often isolated from one another [1]. Nevertheless, opportunities for radiology–pathology correlation include interdepartmental patient conferences such as "tumor boards" and the tradition of radiology resident participation in a radiologic-pathology course at the American Institute of Radiologic Pathology [2]. However, the types of cases in tumor boards may be repetitive, while certain conditions may not be encountered. On the other hand, radiologic pathology course at the American Institute of Radiologic Pathology is rather comprehensive, but is administered in a concentrated manner at one time during residency instead of on a recurring basis. In order to supplement the neuroradiology curriculum for trainees, resident- and fellow-facilitated radiology–pathology focused on head and neck were added to the lecture series since head and neck can be a daunting subject for radiology trainees due to the complex anatomy and pathology. The goal of this study was to evaluate the benefits of these conferences.

Methods

The head and neck radiology–pathology correlation conference cases were selected by the head and neck radiologist and pathologist attendings. It was mandatory for the second year residents and neuroradiology fellows to present at these conferences, but non-monetary awards for the best presentations were offered to them as further incentive to prepare high quality presentations. Each presentation consisted of a description of the patient history, exam, relevant laboratory studies, as well as the radiological findings, imaging differential diagnosis, pathology evaluation, and a discussion of the condition (Fig. 1).

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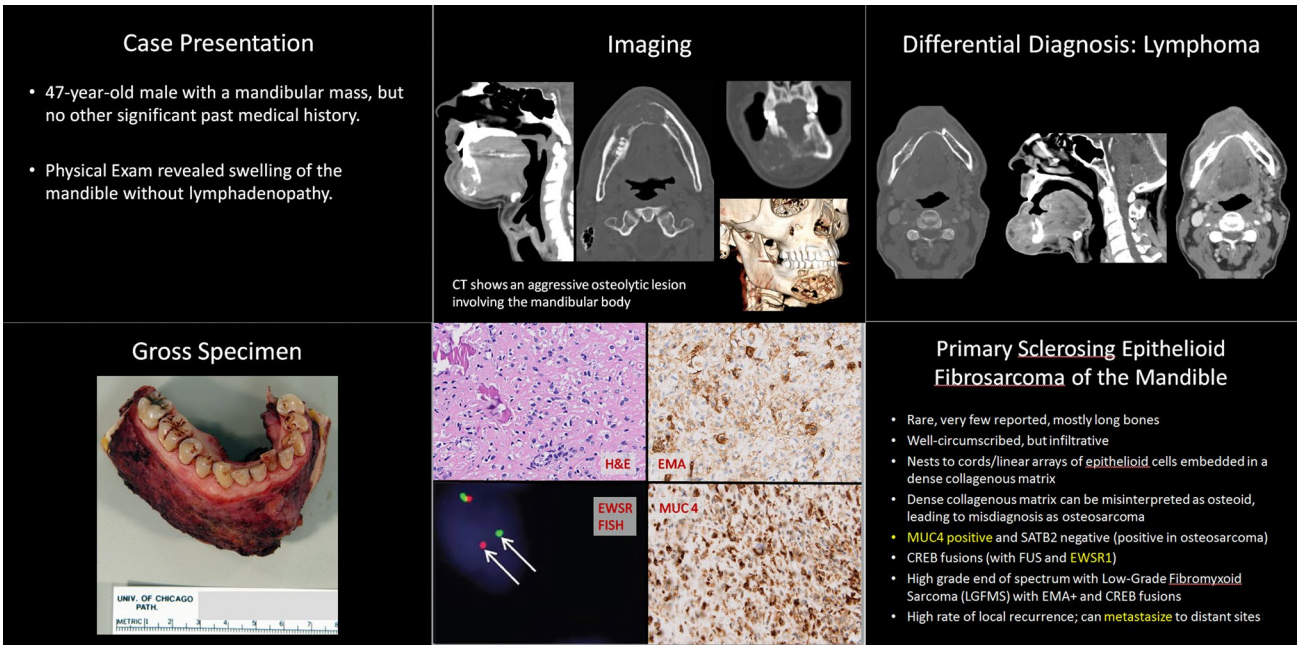

Fig. 1 Sample PowerPoint slides for a case of primary sclerosing epithelioid fibrosarcoma of the mandible

The neuroradiology and pathology attendings reviewed the presentations prior to the conferences. Each topic was presented via PowerPoint for 20–30 min with time available for discussions after each case under the supervision of the neuroradiology and pathology attendings.

A total of seven cases were presented by eight second year radiology residents in conjunction with pathology residents, including the following: jugulotympanic paraganglioma, disseminated malignant extrarenal rhabdoid tumor of the head and neck, lingual desmoid, secretory carcinoma of the cheek, sclerosing epithelioid fibrosarcoma of the mandible, solitary fibrous tumor of the orbit, and salivary ductal carcinoma ex pleomorphic adenoma. A total of six cases were presented by three neuroradiology fellows in conjunction with pathology residents from any year of residency, including sinonasal undifferentiated carcinoma, laryngotracheal amyloidosis, Kikuchi cervical lymphadenitis, cervical chondrocutaneous branchial remnants, high-grade sublingual adenoid cystic carcinoma, and mandibular osteosarcoma.

The number of cases from both the resident and fellow-facilitated head and neck radiology–pathology sessions that were submitted to and published in peer review journals was tracked. Although the trainees were encouraged to prepare the cases for publication with help from the supervising faculty, there were no penalties or questions asked for not doing so. In addition, anonymous surveys consisting of background questions and five-point Likert scale questions related to the impact of the radiology–pathology conferences were administered to all the radiology residents in attendance within 2 days after the fellow-facilitated conferences using the template in the appendix.

The Mann Whitney test was performed to assess for self-reported improvement in understanding of the subject matter attributable to the conferences. A p-value of less than 0.05 was considered significant.

Results

A total of 32 survey responses were returned by the residents for the six fellow head and neck radiology–pathology presentations, including 13 (40.6%) from first year residents, eight (25.0%) from second year residents, four (12.5%) from third year residents, and seven from fourth years residents (21.9%). There were 21 (65.6%) responses acknowledging prior exposure to head and neck radiology conference besides these particular sessions and 11 (34.4%) responses acknowledging no such prior exposure.

Overall, the residents rated the quality of the fellow-facilitated conferences with average score of 3.9 out of 5 and the overall helpfulness with an average of 3.5 out of 5. The overall average level of self-reported understanding among the residents for the topics presented to them by the fellows at baseline was 2.5 out of 5 and 3.4 out of 5 after the presentations, which was a significant increase (p-value < 0.01).

There were two (6.3%) responses that were in favor of pursuing a career in neuroradiology and the rest were not in favor or undecided about this career path. Nevertheless, the average score for how important the head and neck

radiology–pathology sessions were perceived by the residents for their education and subsequent careers was 3.6 and 2.9 out of 5, respectively.

There were three peer-reviewed publications generated from the resident presentations and four peer-reviewed publications generated from the fellow presentations [3–9], which represents a 54% publication rate overall. In particular, there were five cases published as *sine qua non* articles in *Head and Neck Pathology*, and two cases published as case reports, including one in the *International Journal of Surgical Pathology* and one in the *Journal of Craniofacial Surgery*. All the cases prepared and submitted for publication were published.

Discussion

The goal of the dedicated head and neck radiology–pathology conferences was not only to broaden radiology residents and neuroradiology fellow exposure to uncommon conditions, but also to learn about more common conditions through a review of the pertinent differential diagnoses. In doing so, many different conditions were discussed throughout the series of presentations. For example, for the case of Kikuchi disease, the imaging findings of suppurative lymphadenitis, tuberculous lymphadenitis, lymphoproliferative disorders, and lymph node metastases were also depicted and discussed.

Furthermore, these conferences provide an opportunity for radiology trainees to gain exposure to the essential pathology terminology, which is useful when understanding the reports. The survey results suggest that our head and neck radiology–pathology conferences successfully imparted radiology residents with this knowledge for the topics presented. Similarly, student-facilitated radiology–pathology departmental conferences have been found to be effective for learning the subject matter and for providing students with an opportunity to integrate imaging into the longitudinal care of patients and to expose students to the multidisciplinary approach to patient care [10, 11].

Although the majority of residents surveyed reported prior exposure to radiology–pathology conferences, such as the American Institute of Radiologic Pathology, there was a significant perceived benefit from our head and neck radiology–pathology lecture series. Furthermore, although most of the radiology residents surveyed were not planning to pursue careers specifically in neuroradiology, they generally acknowledged the importance of the material presented in the head and neck radiology–pathology conference for their education and eventual careers. Residents undergoing the ACR examination while attending the AFIP improve their percentile scores more than residents who have not attended the AFIP [12].

A secondary benefit of this radiology–pathology lecture program is that the trainees learn and practice formal case presentations, which is a generally useful skill for clinical work and scholarly activities. Indeed, nearly half of the cases presented led to publications. In addition, for the junior residents, these conferences provide preparation and case material for the American Institute of Radiologic Pathology, which radiology residents at our program attend.

The cases used in the head and neck radiology–pathology conferences were derived from the supervising attendings' own interesting case lists and were selected specifically to encompass different anatomic locations for each case presented. In addition, we favored using cases with available gross pathology in additional to histopathology when possible. However, finding relevant teaching material can be a challenge. The search process can be facilitated through the use of data warehouses and automated radiology–pathology correlation software that presents pertinent matches in a user-friendly dashboard format [2, 13].

Limitations of this study are that not all radiology residents in the audience completed the surveys and that surveys were not administered for the resident-facilitated conferences. Other limitations include a small sample size, the lack of tested educational outcomes, the somewhat rare pathological diagnoses included in the presentations, and the intrinsic limitations of using a survey instrument.

Conclusions

Based on our experience with the trainee-facilitated head and neck radiology–pathology conferences at our institution, we believe that incorporating such an activity into the radiology curriculum provides added teaching benefit and scholarly activity opportunities related to the study of the head and neck.

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Compliance with Ethical Standards

Conflict of interest None of the authors have potential conflicts of interest.

Appendix: Survey template

What is your current year in radiology residency?

1. First
2. Second

3. Third
4. Fourth

Have you had prior exposure to head and neck radiology-pathology sessions before this conference series, including here or at AIRP?

1. Yes
2. No

How would you rate the quality of the XX* head and neck radiology-pathology conference?

1. Poor
2. Fair
3. Good
4. Very good
5. Excellent

How would you rate your understanding of XX* head and neck radiology-pathology material before this conference?

1. Not at all familiar
2. Slightly familiar
3. Somewhat familiar
4. Moderately familiar
5. Extremely familiar

How would you rate your understanding of XX* head and neck radiology-pathology material after this conference?

1. Not at all familiar
2. Slightly familiar
3. Somewhat familiar
4. Moderately familiar
5. Extremely familiar

How helpful did you find the XX* head and neck radiology-pathology session?

1. Not at all helpful
2. Slightly helpful
3. Somewhat helpful
4. Very helpful
5. Extremely helpful

How important do you believe exposure to head and neck radiology-pathology as part of your general radiology education?

1. Not at all helpful
2. Slightly helpful
3. Somewhat helpful
4. Very helpful
5. Extremely helpful

How important do you believe exposure to head and neck radiology-pathology as part of your future career?

1. Extremely important
2. Very important
3. Somewhat important
4. Slightly important
5. Not at all important

Do you plan on pursuing a career in neuroradiology/head and neck imaging?

1. Yes
2. No
3. Undecided

*XX corresponds to the topic of each conference.

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