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A Radiologist's Perspective on Musculoskeletal Tumors Multidisciplinary Team Meetings

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A multidisciplinary team (MDT) is described as a gathering of individuals from diverse healthcare fields who convene at a specified time to deliberate on a specific patient.[1] Each participant can independently contribute to the patient's diagnostic and treatment decisions. It's a collaborative approach that brings together various perspectives for comprehensive patient care.[2] Results have generally indicated that MDT is associated with changes in staging/diagnosis, initial management plans, higher rates of treatment, shorter time to treatment after diagnosis, better survival, and adherence to clinical guidelines.[3]

In this editorial, I discussed the adventure of musculoskeletal (MSK) tumors MDT meetings in our own hospital, how decisions are made and how the decisions are implemented, the benefits of these meetings for the radiologist and the patient, and what should be taken into consideration to make the meetings more productive.

Role of the Radiologist

The role of radiologist in the MSK tumors MDT meetings ise given below;

- Actively participate in the meeting.

- Being familiar with the modalities in the radiology department and taking responsibility for the functioning of the department

- Must be sure that the Picture Archiving and Communication Systems (PACS) in the hospital has sufficient equipment and features, and must be able to actively and effectively use the PACS where meeting patients will be discussed.

- Personal application and interpretation of all radiological modalities (direct radiography, ultrasonography (US), magnetic resonance imaging (MRI) and computed tomography (CT)) evaluated at the meeting.

- Ability to direct meeting participants on which radiological modality to apply to the patient.

- The radiologist should have an attitude that describes the lesion or lesions in detail in the report, includes a differential diagnosis regarding the lesion, and guides the orthopedic surgeon and pathologist.

-In order to not to extend the meeting time, the radiological images of the patients to be discussed in the meeting should be examined by the radiologist before the meeting and the images should be interpreted quickly and clearly to other participants in the meeting.

- In order to speed up the patient's diagnosis process, the radiologist should quickly evaluate the radiological examinations performed at an external center, decide whether these examinations need to be renewed, and avoid unnecessary radiological examinations.

- Must be aware of benign and/or do not touch lesions, prevent other participants from aggressive and unnecessary diagnostic processes, and take responsibility when necessary and decide on routine follow-up with non-invasive and X-ray-free radiological modalities.

- In cases where ultrasound-guided biopsy is required, the radiologist should be in communication with interventional radiology to speed up the diagnostic process. If necessary, the biopsy tract should be shown to the interventional radiologist in these patients.

- When coming face to face with patients or their relatives, the radiologist should speak the same language as the orthopedic surgeon, who is the doctor who communicates most frequently with these patients, and should not use expressions that would conflict with the orthopedic surgeon in the information given to the patients.

Importance of Ultrasound

One of the most difficult areas for radiologists, who are routine US practitioners in our country, is ultrasound of MSK tumors. As a result of the evaluation of these tumors with US, these radiologists generally prepare a report containing only descriptive statements, far from preliminary diagnosis or differential diagnosis. This meeting ensures that US, which has a very important place in the

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radiological evaluation of MSK tumors, is applied by the meeting radiologist and increases the contribution of US to the diagnosis.

In addition, radiologists, who do not attend the meeting and only evaluate cross-sectional imaging, never come face to face with the patients. When the patients whose cross-sectional images are evaluated at the meeting are also evaluated with US after the meeting, if appropriate, the patient and the radiologist come face to face and get to know each other. The patient gains confidence by knowing the radiologist as well as the orthopedic surgeon, and the patient's anxiety decreases during the postoperative follow-up period, as there is another doctor he knows and trusts.

US is also very effective in cases with tumor prosthesis, where MRI and CT cause widespread artifactual images, and contributes to the evaluation of recurrence or residue in these patients.

Benefits of Meetings

The table summarizes the findings, demonstrating the value and importance of MDT meetings for radiologists and patients.

Another purpose of these meetings is that, apart from the participants of the meeting, physicians who encounter space-occupying lesions in the extremities can also consult their patients in this meeting and resolve their confusion. For example, physiatrists who are closely interested in the musculoskeletal system but are not familiar with musculoskeletal tumors can present any space-occupying extremity lesion they encounter in their daily practice, along with its images, to this meeting and get information about the lesion. Although most of these lesions are benign, physiatrists are both aware of the patient's lesion and can continue their own treatment with peace of mind.

One of the benefits of this meeting is its contribution to the education process of radiology assistants and young specialist radiologists. In addition, it provides an authority where radiologists working in surrounding hospitals and who are not specifically interested in MSK tumors can easily consult about the cases they encounter and have difficulty in diagnosing.

TABLE 1. Benefits of Multidisciplinary Musculoskeletal Councils for Radiologists and Patients

1	Comprehensive evaluation
2	A correct diagnosis and treatment plan
3	Presenting different perspectives to the radiologist from the clinician's perspective
4	Patient-centered approach to radiological findings
5	Interprofessional, fast and effective communication
6	Recruitment of potential patients for inclusion in clinical studies
7	Identifying academically rare and complicated cases
8	Multidisciplinary treatment diversity and offering different treatment recommendations to the patient
9	Preventing unnecessary examinations and using time effectively as a result of the patient's cooperation with different disciplines
10	In the future, the transformation of multidisciplinary common knowledge and experiences into artificial intelligence by organizing data analytics

Who Should be in this Meeting?

The MSK MDT meeting consists of professionals from different specialties such as orthopedic surgeons, medical and radiation oncologists, radiologists, nuclear medicine physicians and pathologists.

Process of Meeting

Announcement of the place, form and time of the meetings: First of all, a communication network consisting of participants should be established and information and changes regarding the meeting should be conveyed to this authority. Meeting frequency can be determined by taking into account the workload of the participants and the number of patients to be discussed. In our own hospital, we hold this meeting every two weeks, starting on the same day and time. It is important that the meeting coordinator shares the patient list with the participants before the meeting (1 day before, if possible).

Case Presentation: Information about patients, and especially diagnostic images, should be evaluated on a screen that all participants can easily see. In our own hospital, the computer management of this meeting is carried out by the radiologist. Meanwhile, information about the patient is presented orally to the participants by the relevant doctor (usually an orthopedic surgeon). The presentation of information about the patient should be short and concise, and this presentation should be listened to carefully by all participants. Radiology images should be examined in accordance with the radiological sequence, and then the clinician should state his clinical preliminary diagnosis, the radiologist his radiological diagnosis, and the pathologist, if available, his pathological diagnosis.

Decision Phase: Each meeting and its participants have different abilities and experiences. However, the truth is that patients with a clear diagnosis should not be brought to this meeting to save time. In complex cases, a final decision must be reached and this decision must be supported by participants.

How to Deal with Contraversies: Although a final diagnosis is reached in most cases at this meeting, different opinions, radiology-pathology discrepancy or radiology-orthopedics discrepancy may arise in some cases. In order not to extend the duration of the meeting, this case can be handled and reviewed separately by the participants at the end of the meeting and can be discussed again on the same day or the next day via the common communication platform. If a final decision cannot be reached despite this, another alternative can be tried as a solution;

- The pathology preparations of the patient can be consulted by the council pathology member at an external center to a pathologist who is an expert in the area.

- The radiologist can also consult the radiology images of the patient at an external center with a radiologist who is an expert in his or her area.

Pre-diagnoses of the meeting radiologist and pathologist should not be told to the consultants at the external center in order not to influence them. A final decision should be reached based on the comments received from them. In these cases, it would also be beneficial to review the literature for the final diagnosis.

Discussions and opposing views at the meeting are crucial to the final diagnosis. In an example from our own meeting, the lesion on the proximal tibia of a 17-year-old male patient was evaluated radiologically as compatible with Non-ossifying Fibroma (NOF). Bone marrow edema adjacent to the lesion was thought to have developed due to accompanying microfractures. The biopsy result of the lesion was also compatible with NOF. However, as a result of the patient's continuing pain and the orthopedic surgeon's doubts about the current diagnosis, the pathologist re-examined the preparations and stated that osteoblastic activity was also found in addition to NOF. Thereupon, when the radiological images, especially the CT, were re-examined, it was seen that there was a focal mineralized matrix area adjacent to the lithic area considered to be NOF. An open biopsy performed from this mineralized area resulted in osteoblastoma. The diagnosis was updated to "Co-Existence of Non-ossifying Fibroma and Osteoblastoma" and the patient was treated with surgery. If this discussion in the meeting had not taken place, the patient would have been underdiagnosed and would not have been treated.[4]

Documentation of the Decision: Patients and decisions made regarding these patients should be recorded in a database. This both demonstrates the consistency of the meeting and provides the appropriate dataset for academic studies.

In conclusion, MSK tumors MDT meetings are of great importance for the patient with the final diagnosis and provide a great opportunity for the participating radiologist to improve himself. For this reason, the development of this meeting and the standardization of its boundaries by drawing it more clearly is an issue that needs to be worked on in the coming years.

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