Alakyaz Assadorian Radiology Sheet #11 Dr. Abeer Al-Hadidi

* During the last lecture we talked about the radiographic signs of benign lesions (cystic and benign tumors) and malignant lesions.
* We also agreed that malignant lesions are mostly radiolucent, **except** for:
* Osteo-sarcomas
* Chondro-sarcomas
* Metastases from prostate or breast cancer
* Features of malignant lesions:
1. Most important feature of an aggressive lesion is its **ill-defined** margin and wide zone of transition; reflecting the infiltrative nature of the lesion which could fall into any of the two categories; **1. Malignancy OR 2. Inflammation**
2. Irregular shape
3. Interrupted cortex; a malignancy will eat away the cortex without respecting any boundaries

 (inferior cortex of mandible, inferior dental canal boundaries, floor of sinus)

The doctor showed a case of a 55 year old lady who had a complex odontome on one side of the upper arch ( which was pushing the floor of the sinus but was still intact), and a previous squamous cell carcinoma/ later lymphoma (not causing many problems, but floor of the sinus was absent, indicating a malignancy). In this case, neither periodontal treatment, nor RCT will solve the problem.

1. Periosteal reaction; indicating a complete destruction and detachment between the cortex and periosteum, which only happens in aggressive diseases of malignancies and acute pathologies.
2. Invasion of the inferior dental canal with resorption of the bone above and below the canal AND clinical neurologic signs and symptoms (anesthesia or paresthesia);

The doctor viewed two pictures; one was for an ameloblastoma case (which is a locally aggressive benign lesion, with well-defined boundaries and displacement of the canal), the other was for a more aggressive (where there was no displacement of the canal itself, but rather an invasion, associated with surrounding bone resorption above and below the canal.

1. Floating teeth; quick bone resorption without allowing teeth to be displaced.
2. Spiked, very thin, vertical root resorption; as opposed to horizontal sharp resorption in benign tumors.
3. Asymmetric widening of the PDL space; (one of the most famous and most settle factors)

From last year's sheet:

Most common lesions to reside in the PDL space and start from there are; osteosarcomas, chondrosarcomas and lymphomas.

Differential diagnoses are; vertical root fracture, orthodontic movement and scleroderma (if it was symmetrical widening and everywhere)

**Malignant odontogenic tumors**

Malignant odontogenic tumors are luckily very rare from a statistical point of view. They are divided into ectodermal and mixed variants.

1. Malignant Ameloblastoma (most famous)
2. Ameloblastic Carcinoma
3. Ameloblastic Fibrosarcoma, appears white (because the ameloblastic part is the ectodermal part and the fibrosarcoma part is the mixed part).

\*Note:

These tumors are very confusing because the malignant ameloblastoma acts clinically benign but has malignant histologic features, as opposed to the ameloblastic carcinoma which has malignant clinical behavior but is histologically benign.

What is important to us? Their General features of these tumors are; destruction, floating teeth, paresthesia and all what we mentioned above.

**Malignant Non-odontogenic tumors**

Malignant non-odontogenic tumors are much more common.

1. Ectodermal:
2. Squamous cell carcinoma (most famous)
3. Central mucoepidermoid carcinoma (an interesting one)
4. Metastatic carcinoma (a very big one)
5. Mesodermal: (we think of bone and vasculature, they are not as common)
6. Osteosarcoma (disease of younger population – children)
7. Chondrosarcoma (disease of younger population – children)
8. Ewing Sarcoma
9. Fibrosarcoma
10. Rahbdymyosarcoma
* We are able to differentiate between these diseases through clinical signs and symptoms, location and histology (mainly)
* The radiological role is not only succinct to diagnosis, but also for determining the extent of the disease, presence of lymph node involvement and occurrence of metastasis; which are very important prognostic factors and in determining the treatment modalities (surgery alone or combined with radio/chemo-therapy)
* The doctor showed a case of a squamous cell carcinoma in an 88 year old female patient, where a differential diagnosis would be periodontal defect.
* Another case was presented with a vertical defect in the upper molar area, loss of a second molar after 1.5 years and a perforated floor of sinus. A biopsy was taken to confirm the diagnosis of the suspected malignancy.

**Why**?

The differential diagnosis for any lesion that is close to the floor of sinus and oral mucosa is;

1. Squamous cell carcinoma
2. Lymphoma (because it is a common malignancy of the sinus)

\***Note**: The most important aspect of these cases is to realize that there is a malignancy, and not to continue treating the patient as to having something else.

* Another case of an already biopsied and reported carcinoma of the tongue was examined for distant invasion and metastases. On the OPG, an anterior region lesion appeared (compared right and left)

Why do we look for invasion? To determine the stage of the current disease and this will be reflected upon the prognosis and treatment modality.

E.g.: A stage 1 malignancy could become a stage 4 malignancy if bone invasion was evident.

\***Note**: Although malignancies are really bad, they appear very settle from a radiographic point of view. We just need to know the seven characteristics, compare right and left sides, define the lesion and its internal character, margins, effect on surrounding structures, size and shape.

* Reminder:

A cyst is well defined and corticated. If the cyst got inflamed, it loses its cortication but remains well defined.

A metastatic lesion has irregular, ill-defined borders with cortical destruction.

The doctor showed few cases before the CRC part of the lecture began:

1. A panoramic radiograph of a lady with breast cancer, showing loss of anatomy in the upper anterior area, with loss of the lateral border of the nose, the anterior nasal spine and the nasal septum. This lesion cannot be confused with a cyst (as one student asked since the tooth is endodontically treated and has a post in it) because it is ill-defined and too wide and ugly to be a cystic benign lesion.
2. A lesion appeared white, which means there is calcification in it. However, note that it doesn’t mean that it has to be ALL white because smaller lesions start radiolucent and gradually calcificate eventually.
3. A panoramic showing no abnormalities, few amalgam fillings. After 5 years, the patient presented with paresthesia, so there was an ugly lesion. The doctor took bitewings which were very helpful and showed the start of the lesions.

\*Note: Osteosarcoma is a disease of younger individuals.

1. A case showing periosteal reaction; clearly indicating malignancy.
2. A lymphoma case, close to the famous floor of the sinus. The radiographic presentation of a lymphoma does not differ from the radiographic presentation of a squamous cell carcinoma; they only differ histo-pathologically.
* Notes:

1. To decide which list of diseases to add to our differential diagnosis, we should always take into consideration the clinical signs and symptoms, as well as the age, gender and race of the patient.
2. Following cortices is very important, because they are the first structures to be affected in the more serious diseases.
3. 3D imaging is helpful. They show the cortices, and we can follow them precisely. They also show the inner soft tissue masses.

Good Luck

Please Note that this lecture was very short. I included everything said in the lecture and some extra notes from last year's sheet.