THE MRI FINE EVALUATION OF CERVICAL LYMPHADENOPATHIES AND ASSOCIATED ORAL CAVITY PATHOLOGICAL CONDITIONS

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THE MRI FINE EVALUATION OF CERVICAL LYMPHADENOPATHIES AND ASSOCIATED ORAL CAVITY PATHOLOGICAL CONDITIONS (Abstract): The aim of this paper is to point out the value of MRI in diagnostic assessment of cervical lymphadenopathies and associated oral cavity pathological conditions. We used a statistic retrospective method to evaluate the results obtained after MRI examinations of 64 patients diagnosed with oral cavity pathology and cervical lymphadenopathies. In all cases the MRI exams detected the presence of cervical lymphadenopathies, their topographic sites and oral cavity pathological entities that produced them. Due to fine characterization abilities by internal signal variation, MRI is the method of choice in daily practice for diagnosing, evaluation and staging of oral cavity pathology and cervical lymphadenopathies. Due to fine capacities of detecting internal signal variations in soft tissues or visceral parenchyma, MRI has high abilities in diagnostic assessment of oral cavity pathologies being a daily method of choice for diagnosing, evaluation and staging, with great value in any morbid entity. Keywords: CERVICAL LYMPHADENOPATHIES, ORAL CAVITY PATHOLOGY, MRI.

Aroused, as a general rule, by infectious lymphatic spread or by granulomatous or tumoral infiltration, cervical lymph-adenopathies are common marks, in daily practice, for diagnosing, evaluation and staging of oral cavity pathology (1).

Since cervical lymphadenopathies are very close related to oral cavity pathology, their presences affect the treatment and in case of malignancy reduce the 5-year survival following the rule of 50%. In a case of oral cavity squamous cell carcinoma the presence of a single cervical lymphadenopathy reduces the 5-year survival by 50%. If cervical lymph-adenopathies are bilateral, 5-year survival is reduced by another 50%. If there is clinically determined cervical lymph-adenopathy fixation or imaging data of extranodal extension expected survival goes down yet another 50% (2, 3).

In fact the clinician and the radiologist must work together as a team in staging oral cavity pathological entities since combined data can gain an 85% diagnostic accuracy (3).
Detecting internal signal variations MRI has high abilities in diagnostic assessment of oral cavity pathologies together with fine staging and evaluation of cervical lymphatic nodes spread (3).

MRI examination of cervical lymphadenopathies can accurately detect the morphologic and volume changes from the local lymph nodes as a common result of any related anatomic pathologies (3).

The aim of this paper is to point out the value of MRI in cervical lymphadenopathies examination and to underline the ability of this method, in daily practice for diagnosing, evaluation and staging of oral cavity pathology.

**MATERIAL AND METHODS**

MRI examinations were performed in cervical lymphadenopathies of 64 patients with oral cavity pathology clinically and biologically assessed and in cases of malignant diseases even with histopathological attestation.

The patients were MRI examined at Clinical Image Medical Imaging Center Timisoara using a 1.5 T Siemens unit and a dedicated investigation protocol. The MRI images were achieved as multiplanar SPINECO in T1-weighted acquisition with fine anatomical details and in T2 or Proton Density acquisition with great value in pathological changes detection. Fast imaging techniques as fast spin-eco and gradient - eco were sequences obtained very rapidly used in pre and postcontrast MRI evaluations. STIR - short tau inversion recovery - and DIFFUSION are very sensible techniques used for imaging subtle lesions detection (4).

The morphologic data: diameters, shape, contour, the presence or absence of central necrosis or cystic degeneration and extra capsular cervical lymph node extension are the MRI used diagnostic criteria of cervical lymphadenopathies (4).

The size criteria used depends on cervical lymph nodes location in one of the seven levels that they are anatomically classified. Level I nodes are the submental and submandibular nodes. Level II, III and IV are the nodes in the internal jugular chain, with level II nodes located from the base of the skull to the hyoid bone, level III nodes located between the hyoid bone and cricoid cartilage and level IV nodes located below the cricoid cartilage. Level V nodes are posterior to the sternocleidomastoid muscle. Level VI nodes are in the deep visceral chain and level VII nodes are in the superior mediastinum. Level II-VII nodes are considered pathologic in size if they are greater than 1 cm. Level I and the jugulo-digastric nodes are considered pathologic in size if they are greater than 1,5 cm (5).

We used for malignant Hodgkin lymphoma RYE histologic classification and for malignant Non-Hodgkin lymphoma Working Group histological classification with Rappaport terminology equivalents. For precise evaluation of lymphatic nodal spread in malignant lymphoma we used Ann Arbor staging criteria (1).

In cases of oral cavity malignancy we used TNM classification in order to precise imaging tumoral, lymphatic nodes and metastasis staging.

**RESULTS AND DISCUSSION**

We diagnostic assessed cervical lymphadenopathies according to size and architecture imaging criteria and we found in almost all cases nodal diameters between 1 and 3 cm corresponding to TNM stage NI.

In a case of malignant Hodgkin lymphoma (fig. 1) we detect and characterized
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Fig 1. MRI exam of a patient with malignant Hodgkin lymphoma assessed a group of left cervical lymphadenopathies with carotid fixation

MRI cervical lymphadenopathy exam detected 22 cases of malignant cervical lymphadenopathies in patients with malignant lymphoma or oral cavity malignant tumors and 42 cases of reactive lymphadenopathies due to local inflammatory conditions induced by infectious lymphatic viral or microbial spread.

TABLE I

<table>
<thead>
<tr>
<th>Oral cavity pathology</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignant lymphadenopathies:</td>
<td>22</td>
</tr>
<tr>
<td>- carcinoma of the oropharynx</td>
<td>3</td>
</tr>
<tr>
<td>- carcinoma of the floor the mouth</td>
<td>3</td>
</tr>
<tr>
<td>- carcinoma of the salivary glands</td>
<td>2</td>
</tr>
<tr>
<td>- carcinoma of the tongue</td>
<td>2</td>
</tr>
<tr>
<td>- malignant Hodgkin lymphoma</td>
<td></td>
</tr>
<tr>
<td>- mixt celularity</td>
<td>2</td>
</tr>
<tr>
<td>- nodular sclerosis</td>
<td>3</td>
</tr>
<tr>
<td>- limphocitic depletion</td>
<td>1</td>
</tr>
<tr>
<td>- malignant non - Hodgkin lymphoma</td>
<td></td>
</tr>
<tr>
<td>- small grade of malignity</td>
<td>2</td>
</tr>
<tr>
<td>- intermediate grade of malignity</td>
<td>4</td>
</tr>
<tr>
<td>Reactive lymphadenopathies:</td>
<td>42</td>
</tr>
<tr>
<td>- viral parotidites</td>
<td>8</td>
</tr>
<tr>
<td>- tonsilites</td>
<td>14</td>
</tr>
<tr>
<td>- vestibular abscesses</td>
<td>8</td>
</tr>
<tr>
<td>- acute pharingites</td>
<td>10</td>
</tr>
<tr>
<td>- citomegalic inclusion disease</td>
<td>2</td>
</tr>
</tbody>
</table>

From 22 cases of malignant lymphadenopathies, 12 were latero-cervical forms of malignant lymphoma clinically, biologically and histopathological assessed at Hema-
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tology Clinic Timisoara and MRI evaluated at Clinical Image Medical Imaging Center (tab. I).

MRI-scan evaluated the extent of latero-cervical lymphadenopathies in 6 cases of malignant Hodgkin lymphoma: 2 in stage IIA and 4 in stage IIB and in 6 cases of malignant non-Hodgkin lymphoma all in stage IIA.

We evaluated by MRI 10 cases of oral cavity malignant tumors with lymphatic spread cervical lymphadenopathy clinically, biologically and histo-pathological assessed at Clinic of Cranio-Maxilo-Facial Surgery, Timisoara.

In the 3 cases of oropharingeal carcinoma we characterized aT2N1M0 palatine left tonsil localization and a T3N1M0 and a T4N1M base of tongue carcinoma (fig. 2, 3).

![Fig. 2](image1.png)

*Fig. 2. A case of T2N1M0 palatine left tonsil carcinoma MRI clearly delineated and evaluated together with associated cervical lymphadenopathies*

![Fig. 3](image2.png)

*Fig. 3. MRI evaluation of a T3 left base of tongue carcinoma with N1 cervical lymphadenopathies*

We detected 2 cases with T2N1M0 carcinoma of the floor the mouth and a T3N1M0 carcinoma with the same localization. MRI salivary glands evaluation revealed 2 cases of parotid gland carcinoma assessed as T2N1M0 and T3N1M0. In 2 cases we detected and evaluated by MRI-scan T2N1M0 carcinomas of the tongue.

We proceeded to MRI exam in 42 cases of nonmalignant oral cavity pathology at clinician indications to exclude tumoral pathology with fine characterization of inflammatory visceral changes and reactive lymphadenopathies detection. The vast majority of patients reclaimed clinical symptoms of viral or microbial infection together with latero-cervical mass or asymmetry due to cervical lymphadenopathies.
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**Fig. 4.** MRI exam of a T2 right parotid gland carcinoma with N1 cervical lymphadenopathies

**Fig. 5.** MRI of a patient with latero-cervical asymmetry due to level III reactive internal jugular chain lymphadenopathies with greater transverse diameter on right side caused by microbial infection spread from a homolateral vestibular abscess

**CONCLUSIONS**

The size and architecture criteria for cervical lymphadenopathies imaging diagnostic assessment are the best used by MRI to detect, stage and topographic localize their pathological involvement. MRI has gained a large known indication in malignant lymphoma for precise identification of lymphatic nodal spread, staging and accurately pre and post treatment evaluations.

**REFERENCES**