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The usefulness of biopsy in the early diagnosis of oral cancer

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Abstract
Oral cancer still represents a challenge in global health systems, the high morbidity and mortality is explained by the delay in diagnosis; a high percentage of cases present in stage III or IV at the time of initial diagnosis, complicating the prognostic factor. For early detection there are complementary aids such as toluidine blue, chemiluminescence, diffuse white light and loss of tissue auto fluorescence. However, biopsy is a fast, simple and effective method that provides us with a histopathological diagnosis and guides us in medical management and treatment. This article investigates and analyzes the role of biopsy in the early diagnosis of oral cancer, presents two patients diagnosed by this method, and highlights the importance of the preparation of first contact physicians and dentist.

Keywords: Oral cancer, early diagnosis, oral biopsy

Introduction

The body is made up of cells, intercellular and extracellular substances, support and nutrition materials located between cells, and body fluids that include blood in the vascular system; intracellular fluid and lymph. These liquid components are lost during tissue preparation in histologic sections, with the exception of formed elements of blood. Now, to identify an abnormality or pathology, we must resort to histological study and know the normal structure of tissues, and it is histology, also called microscopic anatomy, which deals precisely with the study of cells, tissues and organs [1].

Oral and oropharyngeal cancer is a global health challenge. Delayed diagnosis accounts for the high morbidity and mortality, since nearly half of oral cancer cases are staged III or IV at the time of initial diagnosis which results in poor quality of life [2, 3] Early detection of oral cancer improves morbidity accompanying its treatment, and survival rates can reach up to 82% if localized oral cancer is detected; however, this can decreased to 32% if metastasis had occurred

[4] A number of index tests have been proposed as adjuncts to a conventional oral examination (COE) to improve diagnostic test accuracy (Lingen 2008; Patton 2008; Fedele 2009; Leston 2010; Rethman 2010): Vital staining (toluidine blue, tolonium chloride), Oral cytology (e.g. OralCDx brush biopsy), Light-based detection (e.g. ViziLite, Microlux/DL, VELscope, Orascoptic DK, Identafi 3000) and oral spectroscopy and Blood and saliva analysis [5] Biopsy is a fundamental tool in the diagnosis of oral cancer, without neglecting the clinical examination which includes the presence of ulcerated lesions, changes in color, texture and shine of the tongue and mucous membranes, leukoplakia, erythroplakia, painful nodules, we must explore lymph nodes cervical, weight loss and the general condition of the patient. Whatever diagnostic method we use, we must consider that the best results and prognostic factors for patients will be early diagnosis and timely referral to a cancer center.

Oral Cancer

It is an uncontrolled growth of abnormal cells in the body; forming a tumor, which can develop into surrounding and/or distant tissues and organs when cancer cells separate and spread through the hematic or lymphatic route. This spread is known as metastasis. It is necessary to determine the staging of the cancer since it indicates its location, determines the original tumor and gives us its size and spread. This will allow us to have a prognostic factor, since the time of detection and timely management is the most valuable for the patient.

Previous studies indicate that in most cases, oral cancer presents precursor lesions that could evolve into squamous cell cancer; known as potentially malignant disorders [5, 6]. The World Health Organization describes 12 conditions namely: leukoplakia, erythroplakia, erythroleukoplakia, oral submucous fibrosis, dyskeratosis

congenita, tobacco chewer's keratosis, palatal lesions associated with reverse smoking, chronic candidiasis, lichen planus, discoid lupus erythematosus, glossitis syphilitic and actinic cheilitis [7]

The WHO (World Health Organization) defined a precancerous lesion as a tissue with an altered morphology that makes it more prone to progression to cancer (1978), and in 2005 it replaced the term with potentially malignant oral disorders (PMOD), thus describing all those lesions that determine a risk of malignant transformation [8] and that it is necessary to identify them for the timely diagnosis of oral cancer. The PMOD, include all those clinical conditions in the oral cavity that present an increase in neoplastic malignancy, due to risk factors (tobacco, alcohol and diet) or genetic predisposition.

Exploration of the Oral Cavity

The oral cavity is limited in front by the labial region, laterally by the cheek region, upper by the palatal region, below by the tongue and the sublingual region or floor of the mouth, and backwards by the tonsillar region

The oral cavity house a myriad of tissue types (eg, teeth, minor salivary glands, teste buds) whit varying embryologic origins and physiologic functions that are intimately associated with one another. As a result, the mucosa of the oral cavity is susceptible to the development of reactive, inflammatory, infectious, immune-related and neoplastic conditions [9].

In the oral examination, inspection and palpation must be carried out simultaneously; nodules, changes in the mucosa such as color, texture, white, red, melanotic spots, ulcers and increases in volume must be detected.

The examination should start from the mouth, palpating the lips between the thumb and index finger bimanually, then the mucosa of the cheek is explored from the commissure to the retromolar area passing through the buccal, vestibular and lingual vestibule; this is carried out on both sides; then we must explore the bony, soft palate and isthmus of the fauces and the palatine gum, the league that is the mobile portion must be explored by its back, lateral edges, belly and floor of the mouth, in the root of the tongue they must be identified the following structures: palatine, lingual and pharyngeal tonsils, lymphoid vegetation's of the base of the tongue and the valleculae [10, 11, 12] and finally it is important to palpate the superficial and deep ganglion chains of the neck.

Figure 1 shows the case of a 26-year-old female patient, whose histopathological study reported a mandibular osteosarcoma; she had a history of a neuroectodermal tumor resected 9 years earlier.

Figure 2 shows the case of a 47-year- old female patient, whose histopathological study reported a squamous cell carcinoma of the tongue. She did not refer to a history of importance for her current condition

Fig 1: Female 26 years old, clinically, a lesion extending from the mandibular angle to the canine on the left side is observed, infiltrating the floor of the mouth and not exceeding the midline

Fig 2: Female 47 years old, clinically, a leukoplastic, ulcerative lesion is observed that affects the lateral border and belly of the tongue on the left side and infiltrates the floor of the mouth.

Importance of the Histopathological Study

The histopathological study is essential to establish the definitive diagnosis of various pathological entities that cannot be clinically diagnosed accurately, it also serves to determine the origin and nature of the lesion: if it is inflammatory, reactive, infectious, immunological, neoplastic or other; How to allow prognosis and therapy to be established.

In the histological description of neoplasms, elements of cellular differentiation are considered; a neoplastic cell is well differentiated when it resembles the cell that gave rise to it and is poorly differentiated when it shares fewer features with it.

The importance of determining the existence of oral epithelial dysplasia in some potentially malignant oral disorders such as leukoplakia, erythroplasia, nicotinic stomatitis and actinic cheilitis, not only lies in the fact that it is a fundamental indicator to determine the potential for malignancy but also to establish the conduct to follow. [13] The histological criteria for epithelial dysplasia are: 1) Teardrop- shaped epithelial ridges 2) Basal layer hyperplasia 3) Irregular epithelial cell stratification 4) Increased mitoses and abnormal mitoses 5) Individual cell keratinization in the spinous layer 6) Cellular pleomorphism 7) Nuclear hyperchromatism 8) Loss of nucleus-cytoplasm ratio 9) Enlarged nucleoli 10) Loss of basal cell polarity 11) Loss of epithelial cell adhesion [14]

The size of the sample must be sufficient and include lesional, transitional and free margin tissue It is important not to use antiseptics with dyes, and to avoid damaging the sample by using toothed forceps or infiltrating directly into the lesion, it should be placed in 10% formalin covering 20 times its size to avoid autolysis [15] The surgical specimen for histopathological study will be accompanied by a request with the clinical data of the lesion and the patient's identification card. The bottle where the sample is located must be labeled with the patient's name, age, sex, biopsy site and presumptive diagnosis. If the lesion is central, it is necessary to annex the radiographic image.

The histopathological technique includes: a) Dehydration and embedding in paraffin in histoquinet b) Preparation of paraffin blocks c) Microtome cutting d) Staining generally with hematoxylin and eosin e) Mounting; sometimes special stains are required. The histopathological study is of great importance in the early diagnosis of oral cancer, and there must be close communication between the pathologist, the surgeon and the oncologist, closing the circle of early diagnosis and timely treatment.

Types of Biopsies

Biopsy is a surgical procedure aimed at removing pathological tissue with free margins, and whose objective is to carry out a microscopic study of it to reach a definitive and timely diagnosis. It is very useful in the diagnosis of precancerous lesions, oral cancer, ulcers and volume increases that do not respond to treatment.

According to the technique used to obtain the sample, these can be classified as: superficial biopsy (scraping), fine or thick needle aspiration puncture (PAAF-PAAG), cold scalpel, electric scalpel or CO2 laser biopsy, punch biopsy or punches and material (bone (osteotomy and/or curettage) [16]

Biopsies are usually performed on an outpatient basis, under local or regional anesthesia. Among them stand out:

- **Incisional Biopsy:** it is indicated in extensive lesions of more than 2 cm in diameter, a small portion of tissue with free margins is taken. In the case of multiple lesions, several samples should be taken from the different affected areas.
- **Excisional Biopsy:** indicated in lesions of 2cm in diameter or less, these are carried out for diagnostic and therapeutic purposes. Similarly, the sample must be removed with free margins.
- **Punch Biopsy:** indicated for superficial lesions and that are difficult to access. The punch pliers have two cutting edges and are used like scissors. The punch, on the other hand, is a steel cylinder whose active part is a sharpened hollow cylinder that acts with a rotary cutting movement.
- **Punch or Aspiration Biopsy:** indicated for the diagnosis of parotid gland tumors, intraosseous cystic lesions or adenopathies. A fine needle and a syringe are used, with which tissue or fluid is extracted from the affected region. This type of biopsy is useful in detecting the benign or malignant nature of a lesion, as well as whether a lesion is primary or metastatic. It is not very reliable due to its high percentage of false negatives.

Discussion

Oral cancer represents the third most common form of malignancy in the developing countries, whilst in the developed countries it is the eighth most common cancer form. Oral squamous cell carcinoma is the most frequent malignancy in the mouth, accounting to 95% of all oral malignant lesions. The most affected sites are the tongue, inferior lip, and the floor of the mouth (17, 18, 19) Given the seriousness of this type of injury in which time is of the essence and the prognosis improves or worsens, it is essential to carry out an adequate evaluation, an early diagnosis and timely referral to the Oncology Hospital.

Conclusion

Early detection of oral cancer is an important process in early diagnosis and timely management. The oral cavity offers easy access and direct observation, facilitating the identification of lesions that are suspicious for malignancy and whose characteristics are very special. However, taking a sample and its histopathological study

not only confirms the clinical diagnosis, it also provides aspects regarding the extent and depth of the lesion. The ideal is to detect a malignant lesion in its early stages, and refer the patient to an Oncology Center as soon as possible. Therefore, the theoretical and technical training of first contact physicians (doctors and dentists) is necessary, and on it the Universities and Teaching Hospitals play a crucial role.

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