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Classification of chair side investigations in dentistry

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Abstract

Chair side investigations are simple; require inexpensive equipment and rapidly doing procedures. They do not require specialized training. It is carried out conveniently in a clinic or dental office set up. Dentist should be aware of the investigations, which may be required to establish diagnosis of general medical and surgical problems and of the principles of treatment including drug prescriptions. Doctors and dentists should routinely explain the nature of investigations and obtain verbal informed consent and, for invasive or risky procedures, signed, dated, witnessed informed consent. Chair side investigations hence serve as an important tool in assisting the oral physician to confirm the diagnosis and check out the various treatment plans according to the patients' needs. The present literature review provides the classification of Chairside investigations in Dentistry.

Keywords: Chairside investigations, pre malignant lesion and condition, saliva and taste, nerve block

Introduction

Oral medicine involves the diagnosis and management of complex diagnostic medical disorders affecting the mouth and jaws. In day-to-day clinical experience, dental and medical practitioners often encounter a wide spectrum of oral mucosal lesions. Mucosal disorders may occasionally be correctly diagnosed from a brief history and rapid clinical examination, but this approach is most often insufficient and leads to incorrect diagnosis and improper treatment. When a careful and detailed history is taken, it provides as much information and guides the clinician during the clinical examination.

Investigations of a patient with an oral lesion include chair side investigations, radiographic investigations and laboratory investigations. Investigations are the extension of physical examination in which tissue, blood and other specimens obtained from patients are subjected to microscopic and microbiological examinations.

Diagnostic procedures are useful in determining systemic response to oral infections and in ruling out systemic diseases as a cause of oral lesion. Some of diseases like diabetes mellitus, tuberculosis, syphilis, anemia and cancers may be present for many years without patient being aware of conditions that he is suffering from. The routine laboratory investigations are helpful in bringing awareness to patient, regarding the disease suffering from. Laboratory examinations are important and at times indispensable part of diagnostic process. Data from these investigations provide information that helps us to make early and more definitive diagnosis which in turn leads to better therapeutic results. Dentists use radiographic investigations to find hidden dental structures, malignant or benign masses, bone loss and cavities. As tooth decay and periodontal disease might be missed during clinical examinations, Radiographic evaluation will become critical. Every general dental practitioner should be aware of recent advances in diagnostic oral medicine in order to provide a high level of care.

Chair side investigations can be carried out conveniently in a clinic or dental office set up. They require only simple and relatively inexpensive equipment and can usually be performed with an acceptable degree of accuracy without extensive specialized training. The results of most of these investigations can be known almost immediately which may facilitate in quick and efficient management of the patient.

Minimally invasive interventions are critical to improving healthcare efficiency, enhancing the quality of care provided and reducing cost. The early detection of premalignant lesions of the oral cavity allows for treatment that may be sufficiently early to prevent their progression to an invasive carcinoma thus improving both the survival rate and the quality of life.

Apart for soft tissue lesions or disorders, investigations of hard tissues are also required to detect carious lesions, fractures and any other anomalies of the teeth. Sometimes it is not possible to give the diagnosis based only on examination. Visual examination may aid in giving a working diagnosis but may not contribute to the final diagnosis in conditions like inter proximal caries, fracture of the teeth, pulp vitality etc. Tests for detecting taste and smell abnormalities, for drug allergies are various other chair side investigations which can aid in the diagnosis and treatment for the benefit of the patient.

Classification of Chairside Investigations

1. Investigations for Hard Tissue Examinations ^[1-6]

A) Pulp vitality tests

- i. Thermal test
 - a) Cold test
 - b) Heat test
- ii. Electric pulp testing
- iii. Other tests
 - a. Pulse oximetry
 - b. Test cavity
 - c. Selective anesthesia
 - d. Laser Doppler flowmetry ^[4]
 - e. Photoplethysmography
 - f. Spectrophotometry
 - g. Surface temperature measurement
 - a) Caries detection test ^[7]
 - b) Plaque disclosing agents ^[8]
 - c) Mobility test ^[9]

2. Test for detection of vascular lesions ^[10]

- i. Diascopy

3. Test for detection of potentially malignant lesions and conditions

- a) **Vital staining** ^[11-13]
 - 1) Toluidine blue staining
 - 2) Lugol's iodine
 - 3) Methylene blue
 - 4) Rose Bengal

B) Light Based Detection System ^[14]

- 1) Tissue fluorescence imaging
- 2) Chemiluminescence

C) Cytological technique ^[15-17]

- 1) Oral brush biopsy
- 2) Exfoliative cytology
- 3) FNAC

D) Histological Technique ^[18, 19]

- 1) Incisional biopsy
- 2) Excisional biopsy
- 3) Punch biopsy

4. Investigation for Maxillary sinus ^[20]

- a) Transillumination Test

5. Investigation for Saliva and Taste evaluation ^[21, 3]

A) Collection of whole saliva

- a) Draining technique
- b) Spitting
- c) Suction methods

- i. Parotid collector -Carlsson crittenden cup
- ii. Submandibular - Segregator
- iii. Minor salivary gland -Periotron

B) Test for Xerostomia ^[21]

- i. Tongue blade sign
- ii. Lip stick test

C) Test for detection of Taste disorders ^[22, 9]

- i. Electrogustometry
- ii. Whole mouth test/spit and spit method

D) Test for Oral malodor ^[9]

- i. Organoleptic method
- ii. Gas chromatography
- iii. Sulfide monitors
- iv. Electronic nose
- v. BANA test

6. Investigation for allergy ^[23, 24]

1. Skin prick test
2. Patch test

7. Investigation for Neuromuscular disorder ^[25-27]

1. Diagnostic nerve blocking

8. Miscellaneous ^[28-30]

1. Test for Measurement of Blood glucose (GCF)
2. Test for Trauma From Occlusion
3. Oral Fluid Nano Sensor Test (OFNASET)

Conclusion

Chairside investigations form an integral part of Oral medicine. These investigations help in the diagnosis of various disease states and thus serve in the treatment of the disease. An oral physician requires the basic knowledge of these various investigations. The different chairside investigations give us options to narrow down to the particular diagnosis and exclude out the differential diagnoses. A detailed knowledge of the various investigations aid in the use of the appropriate investigative procedure for its diagnosis and treatment and hence leading to the welfare of the patient. Hence investigations are very important in the diagnosis of various types of systemic diseases and precancerous and cancerous lesions.

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