SUMMARY AND CONCLUSION

The aim of this work is to study the electron-microscopic histopathological changes in middle ear mucosa and drumhead in cases of chronic OME.

Fifty patients suffering from chronic OME were selected from Benha University Hospital. Their ages ranged between 5 and 49 years, they were subjected to the following procedures :

- Complete History taking.
- Complete E.N.T. examination.
- Otoscopic examination and examination by the surgical microscopy.
- Audiometry and Tympanometry.
- Biopsies from the middle ear mucosa and the drumhead were taken and examined by the electron-microscope.

Most patients were presented with hearing impairment, occasionally with tinnitus or earache. The main findings were peripheral vascularization, of the drumhead with loss of its luster. Its colour was changed and the middle ear appeared not aeriated, occasionally hair line or air bubbles were observed. Alteration in the mobility and retraction of the drumhead in chronic OME may be detected.

Hearing impairment was in the form of a conductive hearing loss with an air-bone gap ranged between 20 - 40 decibels in most of cases. All tympanograms were flat ("type

B") only and cases with type C were excluded.

Reversible and irreversible histopathological changes of the middle ear mucosa and drumhead could be seen. Reversible changes include oedema, mild fibrosis and early hyperplasia while irreversible changes were epithelial as late hyperplasia, metaplasia, mucous glands formation and goblet cells multiplication or they may be subepithelial as chronic inflammatory cells infiltration especially lymphocytes and plasma cells and fibrosis with variable degree.

It is noted that many changes can occur together. Fibrosis of variable degree, interferes with blood supply of the epithelium and leads to its hyperplasia and dipping which later on may lead to cholesteatoma formation.

According to our electron-microscopic survey we can say that :

(1) Serous effusion type was associated with passive transudation, extensive intercellular spaces and profuse round cell infiltration. These were a result of increased capillary permeability rather than due to secretory condition of the middle ear epithelium.

The migrating cells through the walls of blood capillaries and even thickened basal laminae of some capillaries may be due to continuous repairing resulting from recurrent migration of fluid or cells from the capillaries outside as was also reflected by

numerous RBcs escaping in the proprial connective tissue.

(2) Sero-mucoid type may be result from mucous secretory process of the epithelial and subepithelial glands and also result from increased capillary permeability at the same time.

In this regard, Lim and Shimada (1971) found that middle ear secretes not only mucus (Sade', 1966) but also other protein substances in a rather discrete manner. In this type of effusion, also ciliation could be observed as a defense mechanism and the cilia were found to be present as a transitionary stage before the condition can be transformed into mucoid type. In this respect, Lim and Klainer (1971) suggested that the proliferation of secretory elements is an expression of increased activity of the biologic defense system in the middle ear. This system includes the mucociliary, enzymatic and immunochemical defense of the mucosa. So, any proliferation of the secretory epithelium and numerous microglands present in OME may suggest that such a defense system is enhanced.

Although Lim and Brick (1971) failed to detect transformation of ciliated cells into secretory cells in human patients, this work supports the transformation phenomenon as it was described in the tracheal epithelium by Spondlin (1959).

(3) Mucoid Type Mainly appears to result from active secretion of the proliferated and metaplastic epithelium and subepithelial glands rather than to be due to vascular disturbance.

This conclusions supported by the presence of a thickened basement membrane and fibrosis of subepithelial connective tissue and stratification of epithelium and the less encountered intercellular spaces in comparison with the serous type. The proliferation phenomenon in the middle ear epithelium supports Friedmann (1963) who believed that the nature of the middle ear epithelium was liable to proliferate into secretory epithelium.

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