Histopathological Study and Registry of Tumors and Tumor-like Lesions of the Ear at Ain-Shams University Hospitals in years (2001-2010)

Thesis
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Contents

List of Tables

List of Graphs

List of Figures

List of Abbreviations

ACCCG	Adenoid cystic carcinoma of ceruminous gland
AK	Actinic keratosis
BCC	Basal cell carcinoma
B-CLL/SLL	B-cell chronic lymphocytic leukemia/ small lymphocytic lymphoma
CEA	Carcinoembryonic antigen
CD_{34}	Cluster of differentiation molecule 34
$CK_{1,7,10,14}$	Cytokeratin 1,7,10,14
CMV	Cytomegalovirus
CNS	Central nervous system
CS	Chondroid syringoma
CTME	Carcinoid tumor of middle ear
EAC	External auditory canal
EE	External ear
ELST	Endolymphatic sac tumor
EMA	Epithelial membrane antigen
EBV	Epstein-Barr virus
GIT	Gastrointestinal tract
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
HMB-45	Beta-Hydroxy beta-methylbutyric acid
HMWK	High molecular weight keratin
HPF	High power field
HPV	Human papilloma virus
ICAM	Intercellular adhesion molecule
IgE	Immunoglobulin E
IHC	Immunohistochemistry
KA	Keratoacanthoma
LCH	Langerhans' cell histiocytosis

LGAES	Low grade adenocarcinoma of endolymphatic sac
LMWK	Low molecular weight keratin
LN_S	Lymph nodes
MCC	Merkel cell carcinoma
MCV	Molluscum contagiosum virus
MEC	Mucoepidermoid carcinoma
MM	Malignant melanoma
MPNST	Multiple peripheral nerve sheath tumor
MSA	Muscle-specific actin
N/C	Nuclear/ cytoplasmic ratio
NCRPE	National Cancer Registry Programme
NEAME	Neuroendocrine adenoma of middle ear
NF-2	Neurofibromatosis
PCNA	Proliferating cell nuclear antigen
PLAP	Placental alkaline phosphatase
PSL	B-cell pseudolymphoma
SCAP	Syringocystadenoma papilliferum
SCC	Squamous cell carcinoma
SMA	Smooth muscle actin
UK	United Kingdom
US	United States of America
UV	Ultraviolet rays
VCAM	Vascular cell adhesion molecule
VHL	Von Hippel-lindau disease
WHO	World Health Organization

Introduction

The ear is the organ of hearing and awareness of head position and movement. The external ear receives and directs sound waves from the external environment. The middle ear transforms sound waves into mechanical vibrations. The inner ear converts these mechanical vibrations to nerve impulses that are sent to the brain to be interpreted as sound. The inner ear also contains the vestibular organs that function in balance ***(Krause et al, 2005)*** .

Nearly all the diseases that can involve the ear also occur in other sites of the body. However, some of these diseases either have a predilecation for the ear or pose special problems when occurring at this site ***(Merchant et al., 2010)***. When evaluating skin lesions of the ear, specific anatomical peculiarities and environmental influences should be considered. An anatomical uniqueness is the high concentration of ceruminous glands in the skin of the EAC so that ceruminous gland tumors are peculiar to the external ear. Regarding the environmental influences, The ear is particularly liable to the effects of UV light due to its exposed localization and, consequently, to pre-neoplastic and neoplastic skin lesions ***(Sand et al., 2008).***

Tumors are unusual in the ear. In the external ear, most of the neoplasms are those of the covering skin. Only the ceruminous glands are peculiar to the external ear, but ceruminous tumors are rare. The underlying bone contributes some swellings and neoplasms to this area ***(Barnes et al., 2005)***. Paraganglioma of the glomus jugulare or glomus tympanicum is the most common tumor of the middle ear ***(Rosai and Ackerman's, 2010)***. Tumors that are derived from Schwann cells are the only frequent neoplasms of the inner ear ***(Barnes et al., 2005).***

Malignant tumors of the ear spread mainly by direct invasion into the temporal bone and neighboring structures (parotid, infratemporal fossa, dura, brain). Lymphatic metastases are uncommon (10%) and distant spread extremely rare ***(Sasaki, 2001)***. Regarding metastatic tumors, the most common sites of the primary are the breast, lung, and kidney ***(Rosai and Ackerman's, 2010)***.

Aim of The work

To study different types of tumors and tumor-like lesions of the ear received at the pathology department, Ain-Shams University and Ain-Shams University Specialized Hospitals during a period of 10 years (2001-2010) with full registration of clinicopathological data from the files.

Anatomy of the ear

The temporal bone, which is part of the skull base houses the ear. Anatomically, the ear is subdivided into outer ear, middle ear and inner ear. The outer ear consists of the auricle, which resides on the lateral temporal bone, and the external auditory canal, 2.5 cm long and follows an S-shaped course which ends at the lateral surface of tympanic membrane ***(Merchant et al.,2010)***.

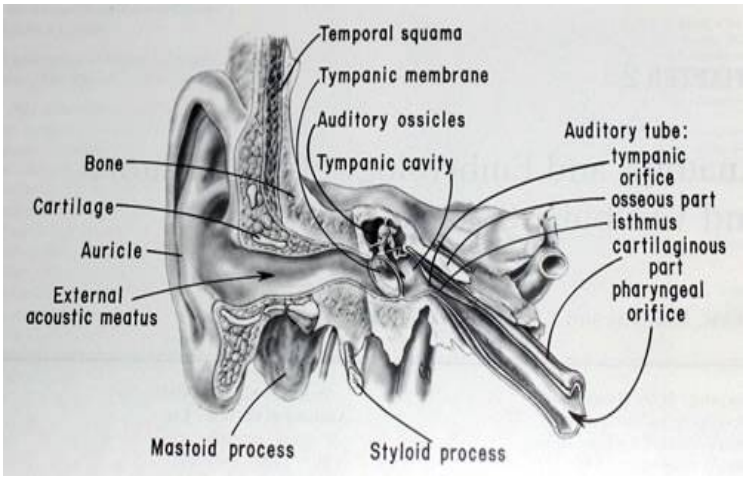

Figure (1): Anatomy of the ear ***(Deng et al., 2012)***

The middle ear is an air containing compartment consisting of the tympanic cavity, Eustachian tube and mastoid antrum. The tympanic cavity is containing the three bony ossicles; the malleus, incus and stapes that unite the medial surface of tympanic membrane with the oval window of the inner ear. The eustachian