Patients: 11 out of 73 patients were diagnosed with TOM and co-existent CME from January 2009-September 2014.

Interventions: Pure tone audiometry, CT-scan, PPD skin test, chest x-ray , PCR and histopathologic examinations were used as diagnostic procedures. The patients underwent single-stage tympanoplasty with mastoidectomy and anti-tuberculosis pharmacotherapy.

Main Outcome Measures: Otoscopic, audiometric and clinical evaluations were done upon follow-up.

Results: The primary clinical feature among our cases was the presence of cholesteatoma and chronic otorrhea. No residuals or recurrences were noted upon follow-up of the patients. The mean air-bone gap improvement after surgery and pharmacotherapy was 10.5 dB. The detection of tuberculosis infection was detected via PCR in all of the 11 patients with TOM and CME. CT-scan findings showed that the majority of TOM with CME patients exhibited various characteristics that are not present in TOM alone. Most of the TOM with CME patients exhibited positive PPD test results while exhibiting negative chest x-ray results.

Conclusions: The clinical and radiologic features of our TOM with CME patients were notably different from the more frequently reported TOM cases without CME. Modest short-term treatment outcomes can be achieved when antituberculosis medical therapy is adequately given after cholesteatoma surgery among TOM with CME patients.

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ID: IP002

The Effects of electromagnetic field exposure at 900 mHz frequency emitted from mobile phones on cochlear cells

Presenting Author: **Yüksel Olgun**

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Learning Objectives:

Aim: Technological developments encountered radiofrequency field from mobile phones in our lives. Possible side effects of electromagnetic field (EMF) need to be investigated. The aim of this study is to evaluate cytotoxic, apoptotic and DNA damage effects of 900 MHz EMF emitted by mobile phones on House Ear Institute- Organ of Corti 1 (HEI-OC1 cell line) cochlear cells.

Methods: Cochlear cells were cultured in 6 well plates at 33°C, 10%CO_2 in humidified conditions. They were exposed to 900 Mhz EMF in conditions of 5 minutes and 15 minutes, directly and 10 cm away from EMF. EMF was applied by a 3 G cell phone and measured by Arduino EMF detector. Cell viability and apoptosis were evaluated after 24 and 48 hours after exposure for each condition and control group by trypan blue and Annexin V methods respectively. DNA damage related gene expressions was evaluated by real time PCR after RNA isolation and cDNA synthesis.

Results: Cell death was more prominent in cells which received 5 minutes of EMF at 48 h. The apoptosis ratio in cells situated 10 cm away from EMF were similar to cells that were directly exposed to 5 minutes of EMF. In gene expression results it was observed that DNA damage related gene expressions were increased in cells after EMF exposure in 48 hours. The expression levels are nearly same in cells that were 10 cm away from EMF. The genes that showed high expression than control are Bax, Gadd45a, Gadd45 g, Mpg, Msh2, Rad51c and Xrcc3, which are related to apoptosis induction and DNA repair.

Conclusion: EMF at high dose for 5 minutes caused cell death via apoptosis in HEI-OC1 cell line in vitro. This result was supported by apoptosis detection and DNA damage related gene expressions. Apoptosis was prominent in 5 minutes and similar for both direct and close distance exposure. Further in vivo and in vitro studies with different doses and distances are needed to evaluate the effects of EMF on cochlea.

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ID: IP003

Friendship of Capsaicin and Cisplatin in HEI-OC1 Cells

Presenting Author: **Yüksel Olgun**

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Learning Objectives:

Introduction: Cisplatin (CDDP) is anticancer agent with serious side effects like ototoxicity. Capsaicin, the active ingredient of chili peppers, has protective effects against CDDP induced renal toxicity. The aim of this study was to evaluate the role of capsaicin on CDDP induced apoptotic cell death and DNA-damage related genes in House Ear Organ Corti (HEI-OC1) cells.

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Methods: HEI-OC1 and KELLY neuroblastoma cells were treated with CDDP (100μM), capsaicin(5μM) and capsaicin (5μM)-CDDP (100μM) at 24 h. Cell viability and apoptotic cell death evaluated by WST-1 and annexin-V/PI flow cytometric analysis. DNA-damage related gene expressions were evaluated by Real-time PCR array (Bio-Rad) in cochlear cells.

Results: Capsaicin did not alter cell viability of HEI-OC1 and KELLY. CDDP reduced the viability of HEI-OC1 (46%) and KELLY cells (74%). Combined treatment of capsaicin (5μM)-CDDP (100μM) resulted in a marked decrease in KELLY (16%) cells. Moreover cell viability in HEI-OC1 (80%) cells were increased. Capsaicin alone induced apoptotic cell death of KELLY cells while it did not induce apoptosis in HEI-OC1 cells. CDDP alone and capsaicin-CDDP combinations increased the apoptotic cell death at same ratios in HEI-OC1 cells. In KELLY cells, capsaicin-CDDP combinations induced apoptotic cell death more than CDDP alone. Capsaicin-CDDP induced Fancg, Mif, Mlh3 DNA repair related gene expressions in cochlear cells when compared to CDDP. Bax, Parp2, Pms2, Rad51, Sumo1 and Trp53 (apoptotic and DNA repair) gene expressions were decreased with capsaicin-CDDP combinations while increased in CDDP alone. Expression of Cdc25c was increased with capsaicin-CDDP while decreased with CDDP alone.

Conclusion: This study showed that capsaicin increased CDDP induced neuroblastoma cell death while cochlear cells viability was increased. Capsaicin might be non-tumor interfering protective agent and the effects must be shown by further studies.

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ID: IP004

Surgical approach of mesotympanic congenital cholesteatoma

Presenting Author: **Mercedes Alvarez-Buylla Blanco**

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Learning Objectives: Congenital cholesteatoma surgical technique preserving intact tympanic structures.

Introduction: Congenital cholesteatoma is often presented as an asymptomatic disease. It is usually discovered during the otoscope examination, seen as a white mass behind a normal intact tympanic membrane. The mean age of presentation is in children between 5 and 10 years old. The early diagnosis and treatment is essential in order to avoid future complications. In children the minimally invasive approach is essential preserving the anatomic ear structures.

Clinical case: We present a minimally invasive approach for congenital mesotimpanic cholesteatoma. We perform an endoaural approach, with two incisions, upper and lower one, and a conchomeatal flap is made. This allows a direct approach to the middle ear. The posterior and anterior annulus are detached extending the anterior annulus 90 degrees anterior to the short process of the malleus, maintaining the stability of the tympanic membrane in the umbus. The ossicular chain remains intact. The cholesteatoma is removed and it is checked tby endocopic vision the full excision of the matrix.

Conclusions: We present a minimally invasive endoaural approach to reach full control and elimination of a desease that left to its natural evolution can develop intracraneal and extracraneal complications.

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ID: IP005

Tacking troublesome tinnitus in Lothian children

Presenting Author: **Ida Amir**

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Learning Objectives: We aim to evaluate the incidence, associated factors, management and outcome of paediatric tinnitus in our cohort of patients.

Introduction: Around a third of children experience tinnitus at some point in childhood. Troublesome tinnitus can affect 5% of children.

Methods: A retrospective cohort study of children referred to a paediatric tinnitus clinic over a 5 year period (March 2010-June 2015).

Results: 30 children were referred for assessment to the paediatric tinnitus clinic. The median age of affected children was 10 years (range 5–16). 83% were boys. 83% had bilateral tinnitus. In 5 children with unilateral tinnitus an MRI scan was normal. Only 17% were found to have abnormal hearing results; 2 with bilateral sensorineural hearing loss (SNHL) and 3 with unilateral conductive hearing loss (CHL). In those with unilateral CHL, 2 had chronic suppurative otitis media (CSOM) and 1 was found to have congenital cholesteatoma. There was no correlation between the type/laterality of hearing loss and the laterality of the tinnitus. 57% had no associated past medical history. History of autistic spectrum disorder (ASD) and anxiety disorder contributed to 30% of cases. Two thirds of children underwent behavioural therapy and were provided with a masker. The remaining children had a combination of behavioural therapy and a sound-ball (Puretone relaxation therapy ball). All patients had a minimum of 6 months follow-up (range 6 months-4 years). 43% were discharged after 1 year of follow-up, with equal numbers of those receiving a masker and a sound-ball (6 and 7 respectively). A further 37% required more than 2 years of regular review. No re-referrals were received during the study period.

Conclusions: Paediatric tinnitus is more common in boys. History of ASD and anxiety disorder are important factors to consider. Behavioural therapy with a sound masker or a

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