Abstract

OBJECTIVE:

The objectives of this study were to determine the presence of epithelial migration in patients with postirradiated nasopharyngeal carcinoma (NPC) and to compare the rate of epithelial migration in the tympanic membrane (TM) and the bony external auditory canal (EAC) of postirradiated NPC ears with normal ears by means of the ink dot method.

STUDY DESIGN:

Prospective, nonrandomized case-control study involving patients with NPC and control subjects with healthy ears seen in an otorhinolaryngology outpatient clinic.

SETTING:

Otorhinolaryngology Outpatient Clinic, University Malaya Medical Centre, Kuala Lumpur.

PATIENTS:

Patients with NPC who have completed radiotherapy and patients with normal ear presenting with other complaints.

INTERVENTION:

Patients who fulfilled the inclusion and exclusion criteria were chosen for this study. All the selected patients' ears were visualized under a microscope and were cleaned, and ink dots were
applied at the umbo and annulus. They were followed up on a 2- to 3-weekly basis until the ink dots reached the specified landmarks. The distance and pattern of migration were recorded and calculated. The mean radiation dose received by both the right and left TM and EAC was mapped and calculated.

**MAIN OUTCOME MEASURES:**

Rate and pattern of epithelial migration in the NPC group compared with that in the control group.

**RESULTS:**

The mean radiation dose to both the TM and EAC did not show a significant difference (p > 0.05). The entire TM study group showed epithelial migration from the umbo toward the annulus and EAC, except in 1 ear. The mean rate of epithelial migration on the TM of the study group was 51.35 μm/d compared with that on the control group, which was 64.68 μm/d, and this difference was statistically significant (p < 0.05). Of the ears in the control group, 42.5% showed a migration pattern toward the posterior-superior direction, whereas 45% of the ears in the study group showed a migration pattern toward the posterior-inferior direction. In the EAC of the study group, the mean epithelial migration was noted to be accelerated compared to that of the control group (144.75 and 94.33 μm/d, respectively; p < 0.05). The mean rate of migration between the TM and the EAC was also different. Both the study and control groups showed a significant difference in migration, with a faster rate of migration in the EAC (p < 0.05).

**CONCLUSION:**

We noted a significant delay in the rate of epithelial migration in the TM of patients with postirradiated NPC and an accelerated rate of migration in the EAC of patients with postirradiated NPC. In addition, epithelial migration in the EAC was also noted to be faster than that in the TM of the control population.