Incidence of Level 2 and Level 2b Sentinel Lymph Node Basin for Cutaneous Head and Neck Malignancy

Francis Creighton MD1, Molly Yancovitz MD2, Jessica Fewkes MD2, Derrick Lin MD1, Daniel Deschler MD1, Kevin Emerick MD1
1. Department of Otolaryngology, Harvard Medical School, Massachusetts Eye and Ear Infirmary, Boston MA
2. Department of Dermatology, Harvard Medical School, Massachusetts Eye and Ear Infirmary, Boston MA

Abstract

Introduction

Removal of cervical level II lymph nodes and specifically 1lb during cervical lymphadenectomy is a well-documented risk factor for damage to cranial nerve XI. The likelihood of metastasis to these levels based on primary location has been well studied in aerodigestive tract malignancy. In cutaneous malignancy, where sentinel lymph node biopsy is frequently used, there is a limited understanding of the locations most likely to result in a II or IIb sentinel node. Better understanding of these drainage patterns could provide useful preoperative information for both sentinel lymph node biopsy as well as elective and therapeutic cervical lymphadenectomy.

Methods

• Retrospective review of 133 consecutive patients undergoing sentinel lymph node biopsy for cutaneous malignancy
• Primary locations divided into 9 categories:
  - Forehead
  - Scalp
  - Cheek
  - Periocular
  - Ear
  - Lips
  - Postauricular/Occipital
  - Neck
• Incidence of level 2 and level 2b sentinel lymph nodes for each of location were determined by reviewing pathology and operative reports.
• Statistical significance was determined by using Fischer’s exact test and odds ratios were calculated to compare individual locations.

Results

• 52.6% of patients had a level 2 sentinel lymph node and 15.8% of patients had a level 2b sentinel lymph node. There was a statistically significant difference in the incidence of level 2 nodes based on primary location (Fisher’s exact test p=0.0189). Ear and periocular primaries had the highest percentage of level 2 nodes, 100% and 66.7% respectively, with lip lesions having the lowest percentage, 16.7%. There was a statistically significant difference in the incidence in level 2 sentinel lymph nodes when ear and scalp primary lesions were compared to all other locations (Fisher’s exact test p=0.0019). An odds ratio showed primary lesions of the ear and scalp were 5.96 (95% CI 2.21 – 16.03) times more likely to have a level 2 sentinel node when compared to other all other locations (Fisher’s exact test p=0.0019)

Conclusions

• Sentinel lymph nodes in Level 2 and 2b are common in cutaneous malignancy of the head and neck
• The primary location has a significant effect on the odds of a level 2 or 2b sentinel node being present
• Ear and scalp primaries are at highest risk of level 2b involvement
• Understanding these patterns of lymph node drainage to level 2 and 2b can be used in preoperative planning for both sentinel lymph node biopsy and elective or therapeutic cervical lymphadenectomy
• Given the risk of spinal accessory injury at time of completion lymphadenectomy after a level 2b sentinel lymph node biopsy, surgeons may consider a complete 2b dissection when a sentinel lymph is present in level 2b. This can help avoid re-dissection in this area of potential morbidity