

2.1 Preoperative Workup of the Neck in Head and Neck Squamous Cell Carcinoma

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PEARLS

- Imaging is crucial in evaluating the extent of metastatic disease and can play a pivotal role in treatment planning.
- Imaging, especially PET-CT and US-FNAC, can detect occult metastases if larger than 5–6 mm.
- Only an invasive technique further improves detection of occult metastases: a sentinel node biopsy.
- Prediction of the metastatic potential of a tumor might soon be available in the form of gene expression profiling.

PITFALLS

- The majority of occult metastases cannot be detected using the current imaging techniques.
- Not treating the neck electively with either surgery or radiotherapy is only warranted in tumors with a moderate to low risk of occult metastases and when adequate imaging follow-up is ensured.
- As the pathology of neck dissection specimens is not very accurate either, a negative pathology report does not guarantee that no metastases are present.

Introduction

Pretreatment workup of the neck is important to decide on indication and extent of the treatment. An important use of pretreatment imaging is the assessment of the extent of neck disease or the infiltration into crucial structures, in order to determine operability. Tumors with encasement of the carotid artery over more than 270° are rarely operable. Other important issues for prognostication are: assessment of necrosis, tumor volume, extranodal spread, involvement of levels IV and V, retropharyngeal lymph nodes or paratracheal lymph nodes.

Although for individual patients it is an advantage when occult metastases are detected with CT or MRI, the unreliable criteria to assess small nonpalpable metastases make these techniques unreliable for the detection of metastases smaller than 8–9 mm. The advent of PET and PET-CT has certainly increased the sensitivity and specificity, but metastases smaller than 5 mm are seldom detected [1]. As US-FNAC is an ideal technique both for initial assessment and follow-up, it has been widely studied for the assessment of the N0 neck [2]. However, the reported sensitivity of US-guided FNAC in the N0 neck varies from 42 to 73%. In a routine setting we recently found that the sensitivity of US-FNAC in small (T1) oral carcinomas treated with transoral excision and a ‘wait and see’ strategy for the neck was significantly lower (18%) than in patients who had an

elective neck dissection for T2–3 oral carcinomas (27%) or T2–3 oropharyngeal carcinomas (50%).

Sentinel node biopsy is reported to be a very sensitive technique. The major disadvantage, of course, is that the sentinel node procedure implicates a surgical procedure that has to be followed by a completion neck dissection when the SN is tumor positive.

Practical Tips

- ① As no currently available imaging technique can reliably detect small metastases, in treatment planning one should consider the risk of occult metastases and either treat the neck electively or use a very stringent follow-up protocol, including imaging, at regular intervals.
- ② As a ‘wait and see’ policy for the N0 neck leads to delayed detection of neck metastases in 15–40% of the patients (depending on the accuracy of imaging and patient population), these patients are treated at a later stage, either implicating more extensive treatment or a poorer prognosis. A very strict follow-up using US-FNAC leads to a similar prognosis.
- ③ To obtain well-interpretable images, CT and MRI should be done with intravenous contrast agents and thin slices (3–4 mm) or spiral CT.
- ④ Ultrasound is only trustworthy if performed by a skilled ultrasonographer, either the surgeon or the radiologist. The same holds true for the interpretation of the cytology.

- ⑤ Although the levels I–III are at risk in most head and neck carcinomas, special attention should be given to retropharyngeal and paratracheal nodes. Any node larger than 5–6 mm in these areas is suspicious.

Conclusion

Although in the last decades imaging has tremendously increased our ability to stage tumors and optimize treatment planning, we are still unable to detect small metastases that frequently occur in early-stage head and neck cancers. Recent advances in the prediction of neck metastases using gene expression profiling or detection using sentinel node biopsy might help us solve this problem in the future. Imaging does have a place in evaluating tumor extent, assessing operability and determining optimal treatment.

References

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- 2 van den Brekel MW, Castelijns JA: What the clinician wants to know: surgical perspective and ultrasound for lymph node imaging of the neck. *Cancer Imaging* 2005;5(suppl):S41–S49.