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Review

Follow-up after curative treatment for oral squamous cell carcinoma. A critical appraisal of the guidelines and a review of the literature

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ABSTRACT

The oral cavity is the commonest subsite of head and neck squamous cell carcinoma (HNSCC). Because of the rising incidence and increasing survival, more patients will be enrolled in a routine follow-up program. This review gives an overview of the evidence and guideline recommendations concerning follow-up after oral squamous cell carcinoma (OSCC).

There is limited evidence concerning the effectiveness of follow-up after OSCC. This lack of evidence is reflected in a variation in guideline recommendations with respect to test interval and duration (i.e. for 3–5 years or lifelong).

Most studies on the value of routine follow-up after curative treatment include all HNSCC subsites. The available literature shows, that these subsites have a different timing of recurrence and a different risk of second primary tumors at different locations. This leaves no rationale for applying the same follow-up program to each of the HNSCC subsites. There is agreement in the literature that OSCC follow-up can either be discontinued after two or three years or should be lifelong based on the risk of second primary tumors. Many authors advocate a personalized follow-up regimen that is based on the risk of new disease rather than a one-size-fits-all surveillance program. The literature is conflicting about the survival benefits of asymptomatic detection of new disease for HNSCC.

To aid the development of evidence-based follow-up advise after OSCC, future research should focus on risk stratification, the value of symptom-free detection of recurrences and the active role that patients might play in determining their own follow-up regimen.

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Introduction

Head and neck squamous cell carcinoma (HNSCC) is the sixth most common cancer in the world [1]. The most common subsite in HNSCC is the oral cavity [1]. Worldwide and in the Netherlands, the incidence and survival of oral squamous cell carcinoma (OSCC) has risen in the last years [1,2]. With a rising incidence and increasing survival, there will be more cancer survivors [2].

It is common practice to enroll patients treated for OSCC in a routine follow-up program. Routine follow-up after OSCC has several goals: early detection of recurrence or second primary tumors (SPT), monitoring functional rehabilitation, psychological support and quality control. One of the assumptions is that routine

follow-up leads to a decreased cancer-specific morbidity, an improved survival or a better functional outcome. However, it has not been proven that clinical- or even more specifically survival benefits exist. Many questions remain unanswered about the optimal duration of the follow-up program and the frequency of follow-up. As a result, follow-up programs differ. In the Netherlands follow-up is addressed in the guideline 'oral cavity- and oropharyngeal carcinoma' which is used nationwide and advises a routine follow-up until 5 years after treatment [3]. Other guidelines advocate lifelong follow-up [4]. As a result of these intensive programs, routine follow-up places a considerable burden on healthcare [5].

Over the past decade, several reviews have addressed this topic, covering the subject of routine follow-up from the viewpoint of the entire head and neck area [6–11]. These place a great emphasis on imaging during follow-up consultations [6,7,10,12] by extensively discussing the accuracy and value of available tests (e.g. imaging) for routine follow-up. We therefore did not include this subject in

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our review. As over 90% of OSCC's are squamous cell carcinomas, this review will focus on this histological subtype. This review gives an overview of the current guidelines and their development process and critically reviews the literature on the value of routine follow-up after OSCC from the perspective of early detection of new disease (i.e. recurrences or SPT's).

Materials and methods

Guidelines including recommendations for the follow-up after treatment for OSCC were identified by a Pubmed search using the search terms guideline, follow-up and head and neck cancer. In addition, the Standards and Guidelines Evidence database [13] was searched manually. Eligible for inclusion were guidelines describing the follow-up of OSCC or HNSCC as a whole. Only guidelines of professional societies or governmental organizations were included. If the search revealed multiple versions of one guideline, only the most recent was included. Five guidelines were identified. The quality of every guideline was assessed independently by two authors (MB and SG) using the AGREE II instrument [14].

A Pubmed search for English and Dutch language publications concerning follow-up of OSCC published in 1990 to December 2016 was conducted. Case reports, reviews and studies including a histology different from squamous cell carcinoma were excluded. Search terms used were follow-up, surveillance and oral cancer. This rendered 3262 papers. After a selection based on title (43 selected), abstract (23 selected) and full text, 19 articles were considered eligible for review. As this were very few, the search was expanded to include studies that comprised the entire head and neck area, including patients with OSCC. In this search, papers on specific subsites of the head and neck area other than the oral cavity (i.e. larynx, oropharynx, nasopharynx, hypopharynx) were excluded. Search terms used were follow-up, surveillance and head and neck cancer. This search rendered 1872 papers. After a selection based on title (68 selected), abstract (49 selected) and full text, 35 articles were eligible for review. Of these, 5 articles were already identified in the first search. The combined searches led to the inclusion of 49 articles. These articles will be discussed according to the following themes: the duration of follow-up, adherence to follow-up protocols, the value of asymptomatic detection and costs of routine follow-up.

Results

Guidelines

The follow-up recommendations of the five included guidelines are presented in Table 1. The advised length of follow-up varied from 3 years after treatment to lifelong. The AGREE II scores are presented in Table 2. All guidelines were deemed good enough to

use, albeit some with modifications. Most guidelines scored high in stating a clear scope and purpose of the guidelines and a clear presentation of the recommendations. The stakeholder involvement, rigor of development, applicability of the recommendations and the editorial independence as assessed by the AGREE II instrument, varied greatly between the guidelines.

Follow-up duration

To determine the duration of routine follow-up, the timing of the occurrence of recurrences or SPT's is pivotal.

Patterns of new disease – recurrences

Sasaki et al. found that all recurrences after OSCC were detected within three years after treatment and most (86%) within the first year after treatment [15]. Merckx et al. found that 90% of locoregional OSCC recurrences occurred within two years after treatment and found a wider range for the time to the occurrence of SPT's in a cohort of T₁₋₂N₀M₀ oral tongue cancers [16]. Wensing et al. reported that 83% of OSCC recurrences after a clinically negative neck occurred within two years [17]. Kumar et al. found that 82% of the recurrences in the oral cavity occurred within three years, but did not provide recurrence curves with information on the first three years [18].

Haas et al. showed that about 60% of the new tumor manifestations in the head and neck area occurred in the first two years, 30% in years three to five and 10% after five years after initial treatment [19]. Dhooge confirmed that over 90% of recurrences of HNSCCs occurred within the first two years after treatment for the primary tumor [20]. Jung et al. did not find a difference in occurrence of new disease between the subsites of the head and neck area [21]. Jung et al. observed that 41% of HNSCC patients had a second event in year one, 27% in year two, 14% in year three, 12% in year four, 7% in year five and 1% after five years [21].

Most studies therefore conclude that follow-up for OSCC can be stopped after the first three years of follow-up [7,10,18,22,23]. Some authors advocate longer follow-up because of the lifelong risk of SPT's [24]. These differences are also reflected in the follow-up regimens presented in Table 1.

It is tempting to conclude that follow-up after curative treatment for oral cancer to detect recurrences should be terminated after three years. The exact year is difficult to define based on the available literature as the above mentioned studies did not present recurrence curves nor risk of recurrence data for all individual years post-treatment.

Patterns of new disease – second primary tumors

Multiple authors have confirmed that patients with HNSCC have a lifelong risk of a SPT, both within the head and neck area as well as

Table 1
Guidelines for the follow-up of oral cancer and monthly follow-up interval per year.

Guideline	Year	Scope	Year after treatment						
			1	2	3	4	5	>5	
Scottish Intercollegiate Guidelines Network (SIGN)	2006 (reviewed in 2012)	Head and neck cancer	"frequently"	"frequently"	"frequently"	–	–	–	
National Comprehensive Cancer Network (NCCN)	2016	Head and neck cancer	1–3	2–6	4–8	4–8	4–8	12	
Cancer Care Ontario	2009	Head and neck cancer	3	4	6	–	–	–	
Dutch Head and Neck Society	2003	Oral oropharyngeal cancer	2–3	3	4–6	6	6	–	
Multidisciplinary Guideline of the British Association of Otorhinolaryngology, Head and Neck Surgery (ENT-UK)	2011	Head and neck	2	2	3–6	3–6	3–6	For high risk patients, frequency undetermined	

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