Radiotherapy for head and neck cancer
- costs and benefits of time, dose and volume

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Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av medicine doktorsexamen framläggs till offentligt försvar i Sal 933, 9 trp, byggnad 3A.
Fredagen den 24 februari, kl. 09:00.
Avhandlingen kommer att föras på svenska.

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Abstract

Background In the treatment of head and neck cancers (HNCs), radiotherapy (RT) has the advantage of organ preservation compared to surgery. However, treatment toxicities associated with RT can affect important functions for everyday life, both in the acute and late stage. RT to macroscopic tumour in HNC is commonly combined with elective RT to cervical lymph nodes at risk of microscopic involvement. The resulting risk reduction of the elective treatment based on dose-volume parameters is sparsely evaluated. So is the relationship between the elective treatment and treatment toxicity. The present thesis addresses these aspects.

A strategy aimed at improving the outcome of RT is accelerated fractionation (AF). AF strives to shorten total treatment time to minimise proliferation of the tumour tissue during the RT treatment period. We have investigated the impact of accelerated fractionation on both disease control and toxicity.

Methods In the ARTSCAN study, 750 patients with localised HNC were randomised between AF (68 Gy in 4.5 weeks) and conventional fractionation (CF) (68 Gy in 7 weeks). The elective treatment volume was prescribed 46 Gy with CF in both treatment arms. The thesis is based on four individual papers, investigating the issues above in the whole study population or in sub-populations.

Results No difference in disease control or late toxicity between CF and AF was observed at five years. However, there was an increased acute toxicity with AF. Weight loss was associated with treatment volume, independent of tumour stage. The elective treatment volume was found to be an independent risk factor for late aspiration, as well as mean dose to the pharyngeal constrictor muscles, neck dissection, and age at randomisation. There was a significant risk reduction for node relapses in volumes treated to an elective dose. Only a relapse in volumes treated to >60 Gy affected the survival.

Conclusion The present thesis questions the benefit of accelerated fractionation in definitive RT as well as extensive elective treatment of the cervical nodes.

Keywords Head and neck cancer, radiotherapy, accelerated fractionation, elective treatment, side effects