Improvement of the diagnostic accuracy  
Better prediction of the course of disease  
Early detection of patients at risk

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The next options included in the new version will allow drawing in the 3-D-images as well as an clean up or correction of the images to better represent the tumour's volume according to findings of the physician. This integrates clinical findings into the segmentation based on radiological data.

As a really suitable software-based documentation tool, the TTM is in clinical evaluation in the ENT Department of the university hospital in Leipzig, Germany since 12/2009.

Methods

The 3-D-model is generated by segmentation and visualisation from regular diagnostic CT scans (1.00 mm) and is the basis for integration of many functional patient data.

3-D presentations allow better descriptions of small and complex structures, improvement and interpretation (minimal distance to risk structures). The integration of non-radiological information is possible (tumour fixation, photographs, functional imaging (PET), histology). This is on the main advantages of the computer-based therapy planning by using the TTM as a good quantification not only of surface dimensions but also an interactive quantification of volumes and distances in the depth of the issue (fig 2).

The used version of the TTM improves the documentation of the individual tumor size and the knowledge of the depth infiltration. The combination of different kinds of information (photographs with annotation, CT scan with or without segmented structures, distances to risk structures, volumetry, tumour drawings in postgrame) results in a concise document with high plasticity and permit a good reproducibility of the tumour staging over the time (fig. 4).

Especially the 3-D-presentation enables a more reliable evaluation of minimal distances to risk structures and consequently enables better planning of surgery and radiotherapy. The actual focus in development is the drawing function within the 3-D-view which creates a new document quality. These 3-D-data are interesting especially for patients after surgical treatment since it improves radiotherapy planning. Further developments aim at the use of the 3-D-pansendoscopy as the base for the integration of the whole data accompanying the patient's therapy (pathology: instantaneous sections, biopsies; follow up).

Conclusion

The Tumour Treatment Manager on basis of the 3-D-pansendoscopy system is the start of an individual 3-D-patient model for daily use, which besides image data brings together a multitude of functional and clinical information of the shape and volume of the tumour. The use of these data in radiotherapy planning will improve treatment quality of HNSCC.