LA RADIOTERAPIA
DEI TUMORI DEL DISTRETTO CERVICO FACCIALE

I RITRATTAMENTI

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ISTITUTO DI RICOVERO E CURA A CARATTERE SCIENTIFICO

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Head and neck squamous cell carcinoma (HNSCC) comprises cancers of the oral cavity, oropharynx, larynx, and hypopharynx.
It is the sixth most common cancer worldwide, with an incidence of around 600,000 cases per year.

The overall 5-year survival rate for such patients is around 50% or less.

Present treatment options include radiotherapy with or without chemotherapy, surgery with or without radiotherapy or chemotherapy, and more recently radiotherapy with molecularly targeted agents such as cetuximab.

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Predicting Recurrence After Radiotherapy in Head and Neck Cancer

Adrian C. Begg, PhD

Head and neck squamous cell carcinoma (HNSCC) is the sixth most common cancer worldwide. Radiotherapy is a mainstay of treatment, either alone for early stage tumors or combined with chemotherapy for late stage tumors. An overall 5-year survival rate of around 50% for HNSCC demonstrates that treatment is often unsuccessful. Prediction of outcome is, therefore, aimed at sparing patients from ineffective and toxic treatments on the one hand, and indicating more successful treatment modalities on the other. Both functional and genetic assays have been developed to predict intrinsic radiosensitivity, hypoxia, and repopulation rate. Few, however, have shown consistent correlations with

Based on a large number of studies, 3 major biological factors have been defined that determine the response of HNSCC to fractionated radiotherapy,

- intrinsic radiosensitivity of the tumor cells,

- the extent of tumor hypoxia,

- the capacity of surviving tumor cells to repopulate

during gaps in treatment.

more recently, human papilloma virus (HPV) infection in the tumor has been shownto be a significant outcome predictor, particularly in oropharyngeal cancer.

In addition, host factors can influence tumor behavior, such as tumor vascularity and host cell infiltrates.

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Human Papillomavirus as a Marker of the Natural History and Response to Therapy of Head and Neck Squamous Cell Carcinoma

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Table 2 Treatment Outcome by Tumor HPV Status From Patients Enrolled in Multiinstitutional Trials

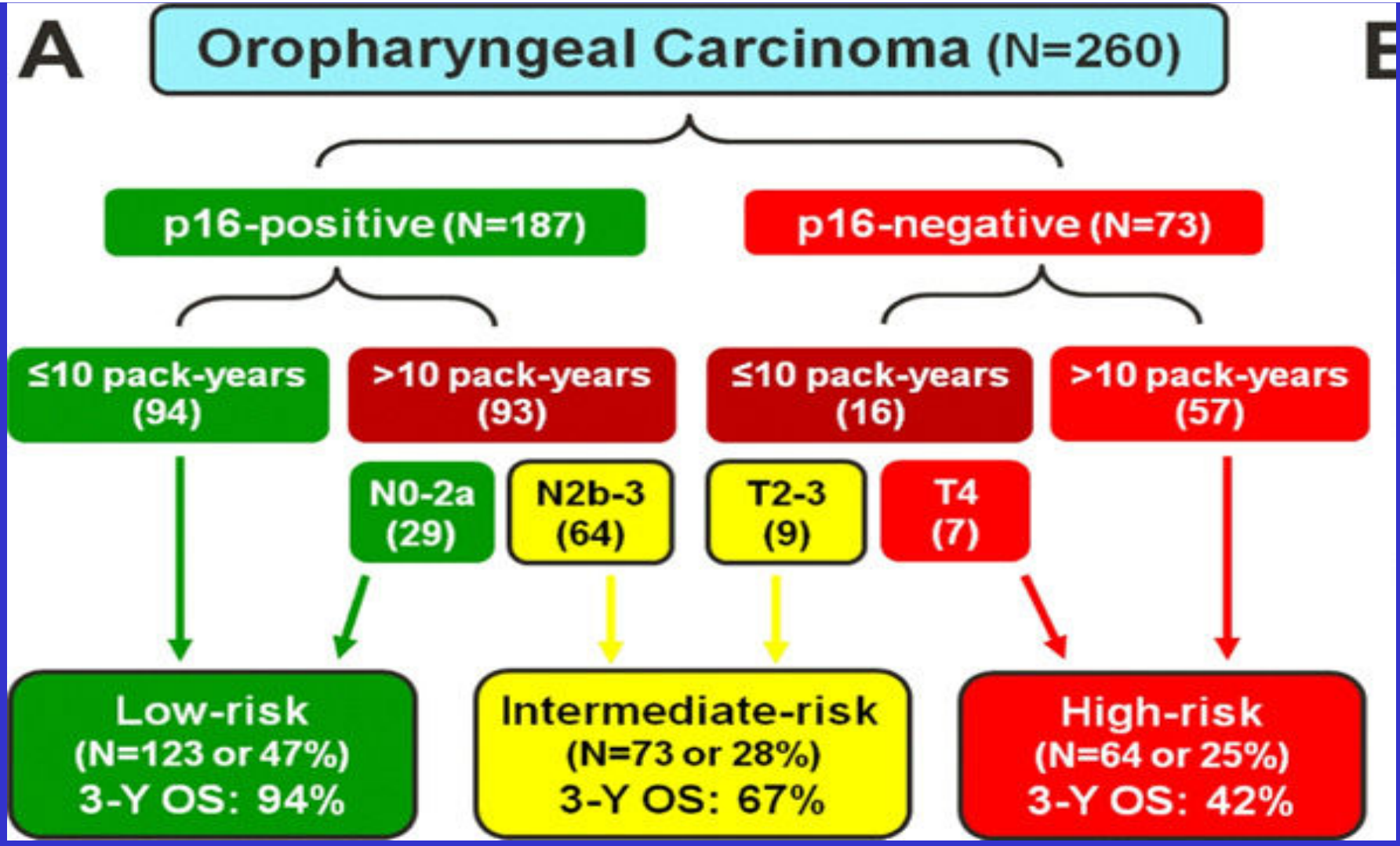
			Outcome HPV Positive Versus HPV Negative		
Author	**N**	**Assays**	**Endpoint**	**HR (95% CI)**	***P*-Value**
Fakhry et al[40]	96	ISH and p16	Tumor progression	0.27 (0.10-0.75)	0.01
*Ang et al[42]	323	ISH and p16	Overall survival	0.42 (0.27-0.66)	<0.001
			Progression-free survival	0.49 (0.33-0.74)	<0.001
*Rischin et al[44]	185	p16	Overall survival	0.36 (0.17-0.74)	0.004
			Failure-free survival	0.39 (0.20-0.74)	0.003
*Posner et al[43]	111	PCR (E6-E7)	Overall survival	0.20 (0.10-0.38)	<0.0001
Lassen et al[41]	794	p16	Overall survival	0.62 (0.49-0.78)	<0.001
			Disease-specific survival	0.58 (0.41-0.81)	0.001

Abbreviations: HPV, human papillomavirus; HR, hazard ratio; CI, confidence interval; ISH, in situ hybridization; PCR, polymerase chain reaction.
*Series consisting exclusively of patients with oropharyngeal carcinoma.

HPV positivity expression is a strong prognostic biomarker for oropharyngeal carcinoma. It is associated with better tumor control and survival outcomes after radiotherapy alone, platinum- and taxane-based induction chemotherapy, and concurrent radiation and cisplatin.

The multivariable analysis of the RTOG data showed that HPV status was the strongest prognostic determinant

Tobacco smoking induced additional molecular alterations in HPV-associated oropharyngeal carcinomas that alter their biologic behavior and response to therapy.


A
Oropharyngeal Carcinoma (N=260)
B
p16-positive (N=187)
p16-negative (N=73)
≤10 pack-years (94)
>10 pack-years (93)
≤10 pack-years (16)
>10 pack-years (57)
N0-2a (29)
N2b-3 (64)
T2-3 (9)
T4 (7)
Low-risk (N=123 or 47%) 3-Y OS: 94%
Intermediate-risk (N=73 or 28%) 3-Y OS: 67%
High-risk (N=64 or 25%) 3-Y OS: 42%