

Racial differences in prevalence of HPV associated head and neck carcinoma: *is chronic inflammation a cofactor?*

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HNSCC

Ranks 5th worldwide in annual incidence

- 50,000 new cases annually in U.S.**
- 5 year survival ~50%**

SC exceeds U.S. incidence rate for HNSCC

- 3rd in the nation in mortality**

High-risk HPV is an etiologic factor in:

- ~50% of oropharyngeal cases**
- ~25% of all HNSCC**

HPV+ HNSCC

Separate entity from HPV-negative tumors

- Epidemiology

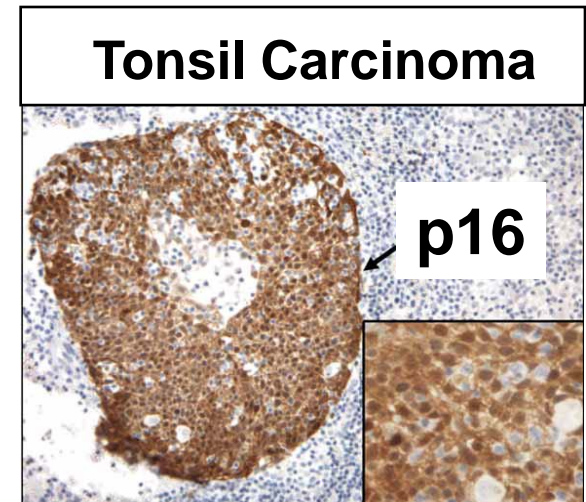
- Younger age (<45)
- Males
- No smoking / alcohol history

- Molecular

- Distinct gene expression profile
- Lack of p53 mutations
- P16 high
- High risk HPV type 16 (>90%)

- Clinical

- Arise in tonsil and base of tongue (>50% HPV+)
- **Better prognosis**
- **Better response to chemoradiation**



Rose BR et al., MJA 2004; 181:415

Racial Disparities in HNSCC

- AA males in SC have higher incidence of HNSCC than any other racial/gender group
- Present at a younger age with more advanced stage disease
- Poorer outcomes and worse survival
 - Mortality rate twice that of EA

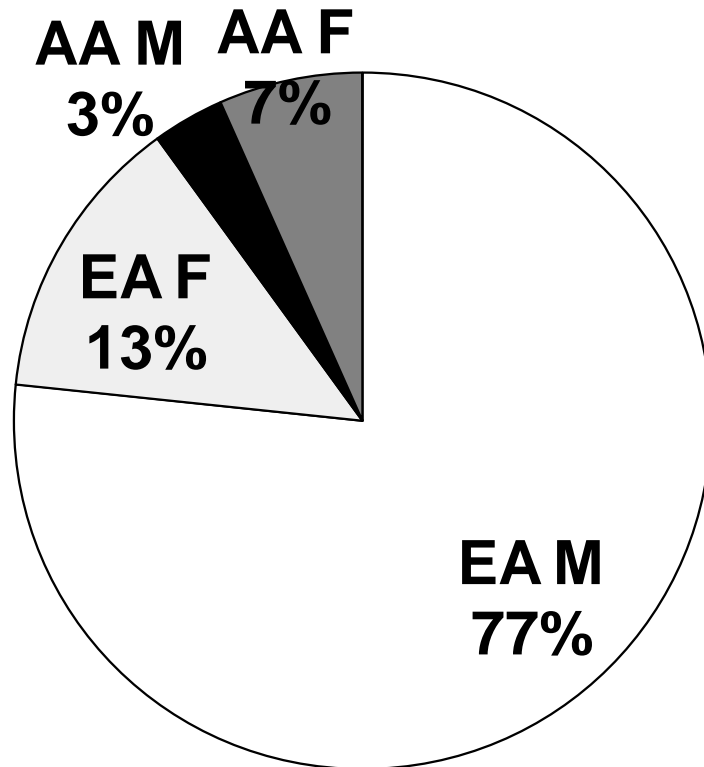
Hypothesis:

The observed survival differences might reflect differences in prevalence of HPV+ HNSCC, which has a better prognosis than HPV- disease

Table 1. HNSCC Study Population (n=74)

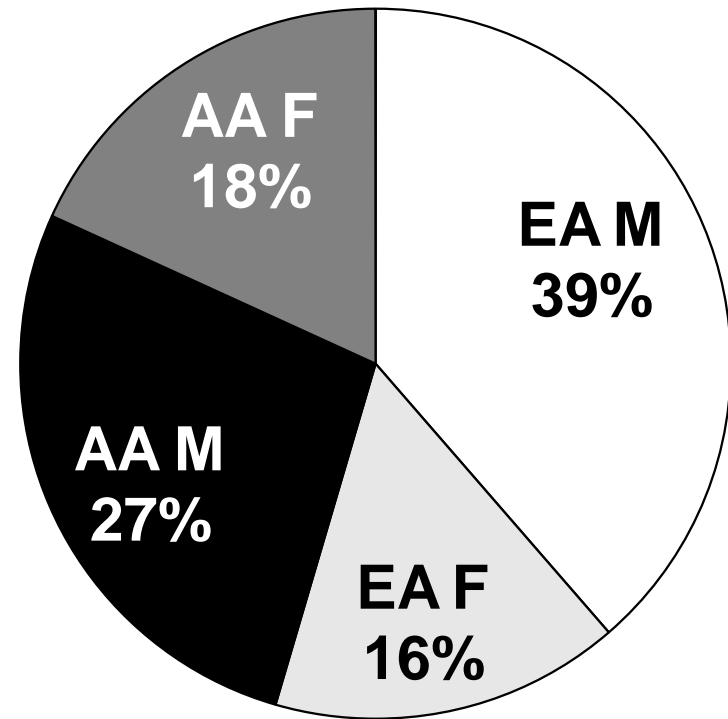
Race		EA (n=51)	AA (n=23)
Disease Stage	1	2 (3.9%)	1 (4.3%)
	2	5 (9.8%)	2 (8.7%)
	3	7 (13.7%)	2 (8.7%)
	4a	31 (60.8%)	16 (69.6%)
	4b	4 (7.8%)	0 (0%)
	Unstaged	2 (3.9%)	2 (8.7%)
Site	OP	27 (52.9%)	7 (30.4%)
Sex	Male	40 (78.4%)	13 (56.5%)
	Female	11 (21.6%)	10 (43.5%)
Age	Mean (Range)	58.25 (33-82)	59.86 (40-83)

HPV-16⁺ (n=30)



Mean Age: 57.2 (34-73)

HPV-16⁻ (n=44)



59.1 (33-83)

**HPV+ AA patients (3/23, 13.0%),
HPV+ EA patients (27/51, 52.9%)
($p = 0.002$; 2-tailed Fisher's exact)**

Common Risk Factors

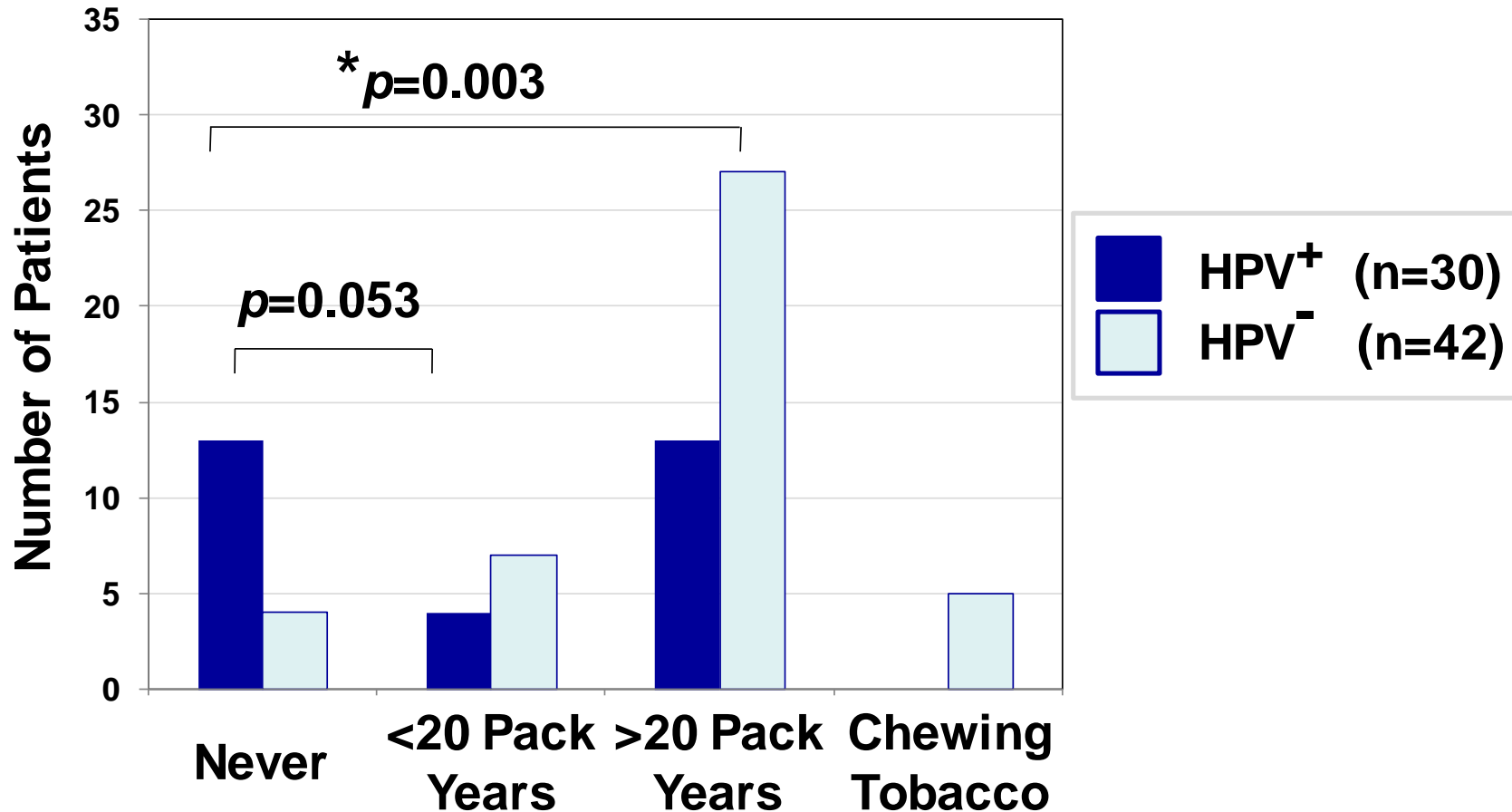
HPV+

- **Sexual behaviors associated with sexual transmission**

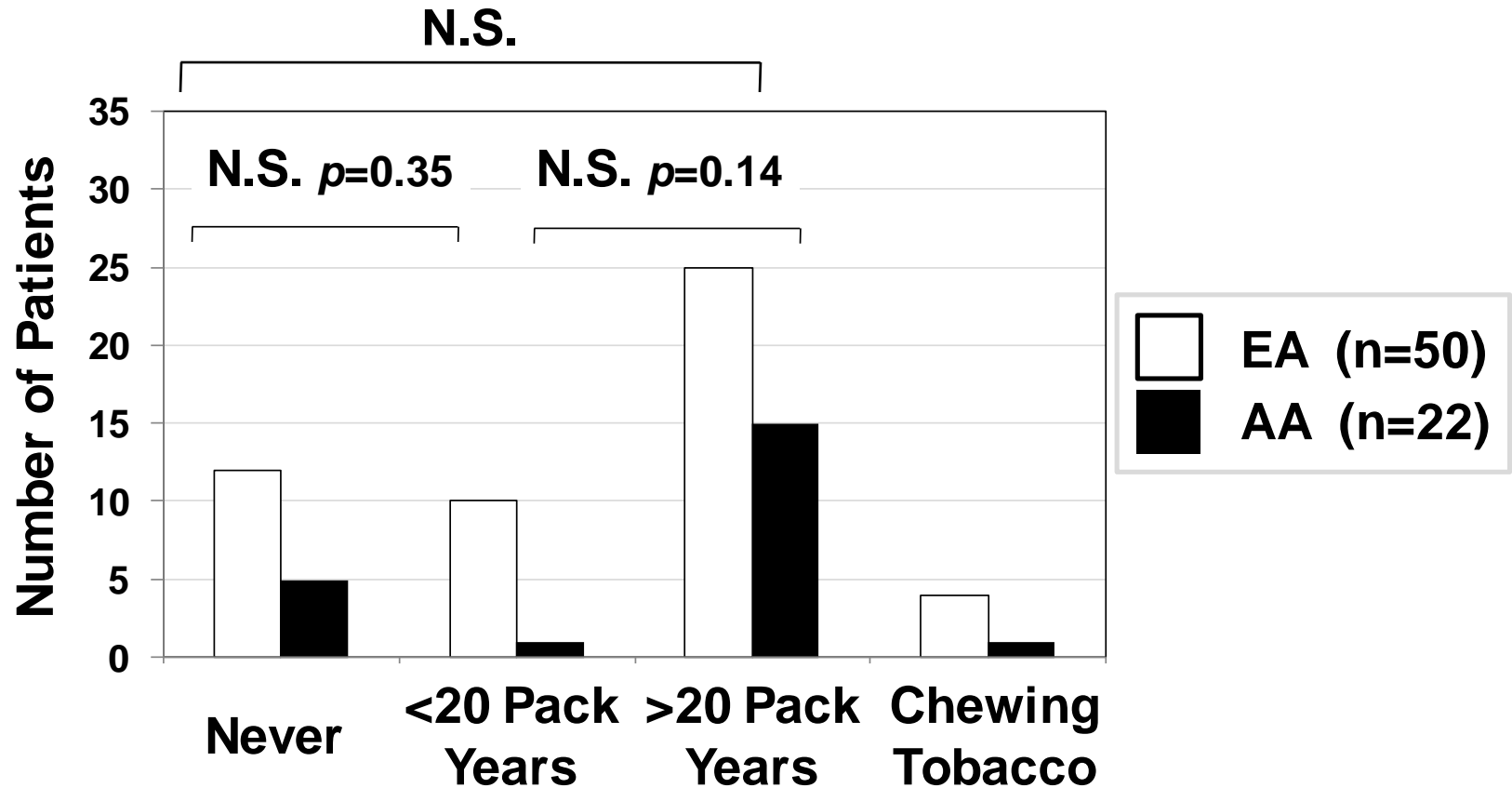
HPV-

- **Smoking**
- **Alcohol use**
- **Poor oral hygiene**

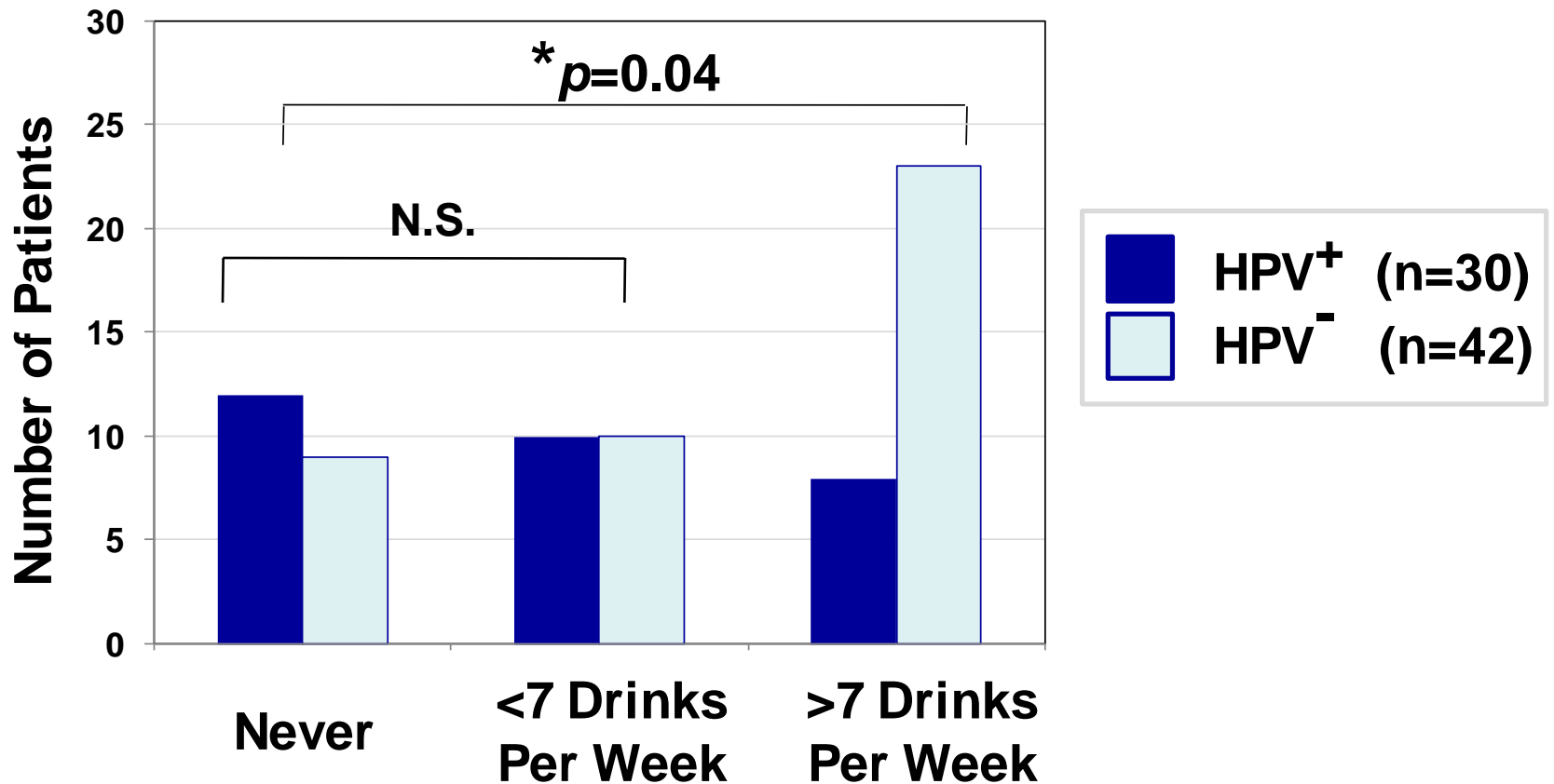
Tobacco History



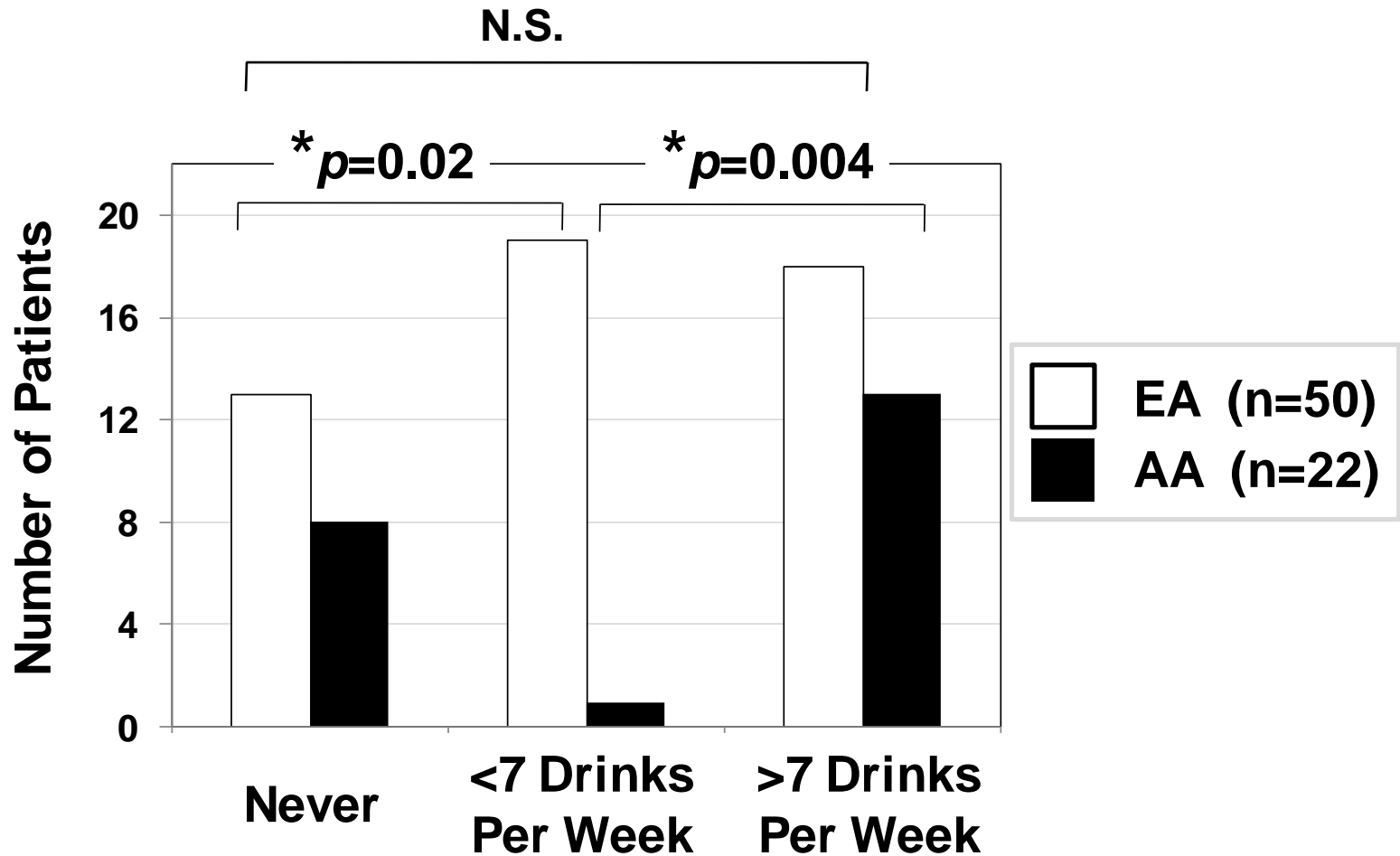
Tobacco History



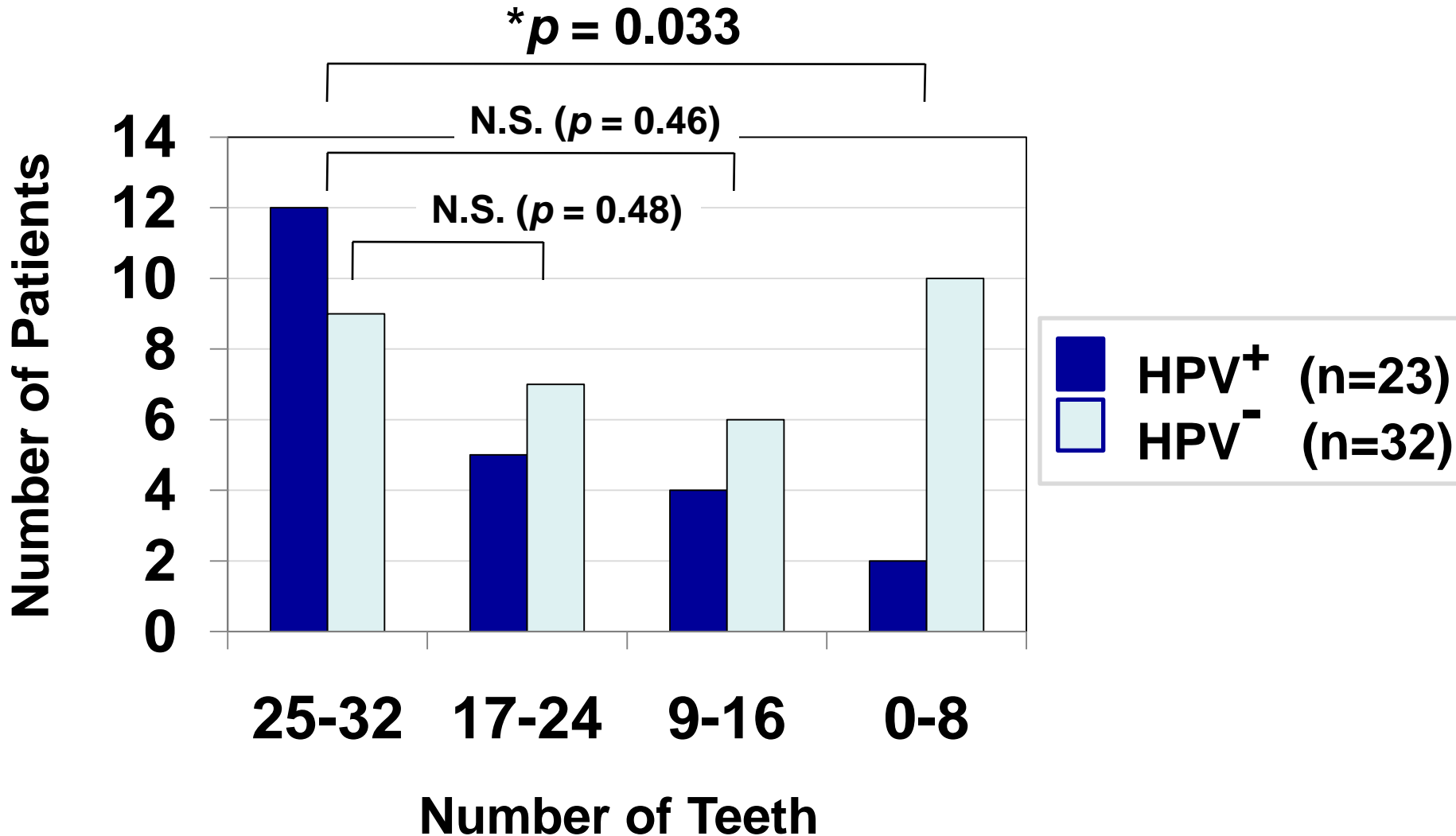
History of Alcohol Consumption



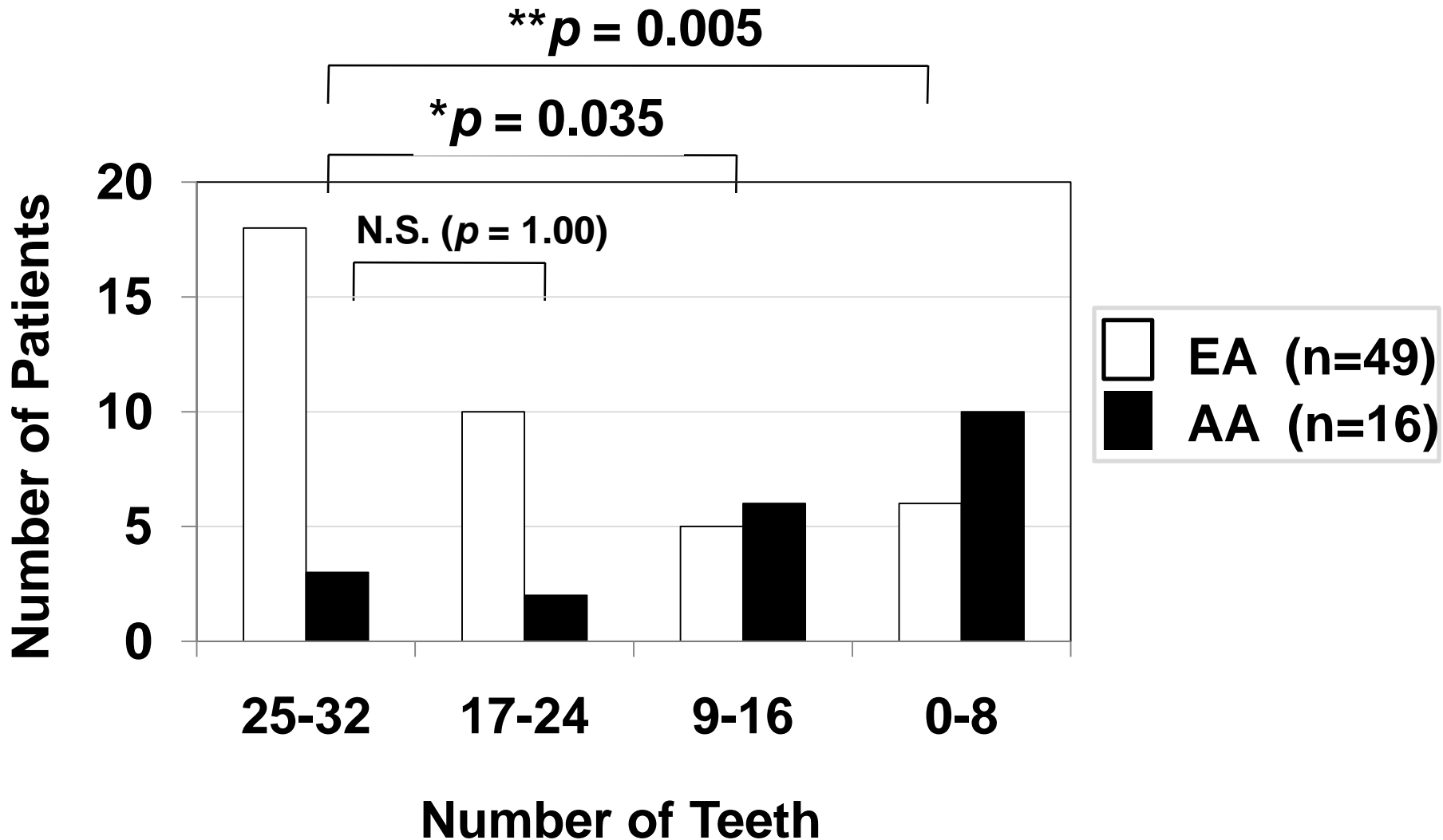
History of Alcohol Consumption



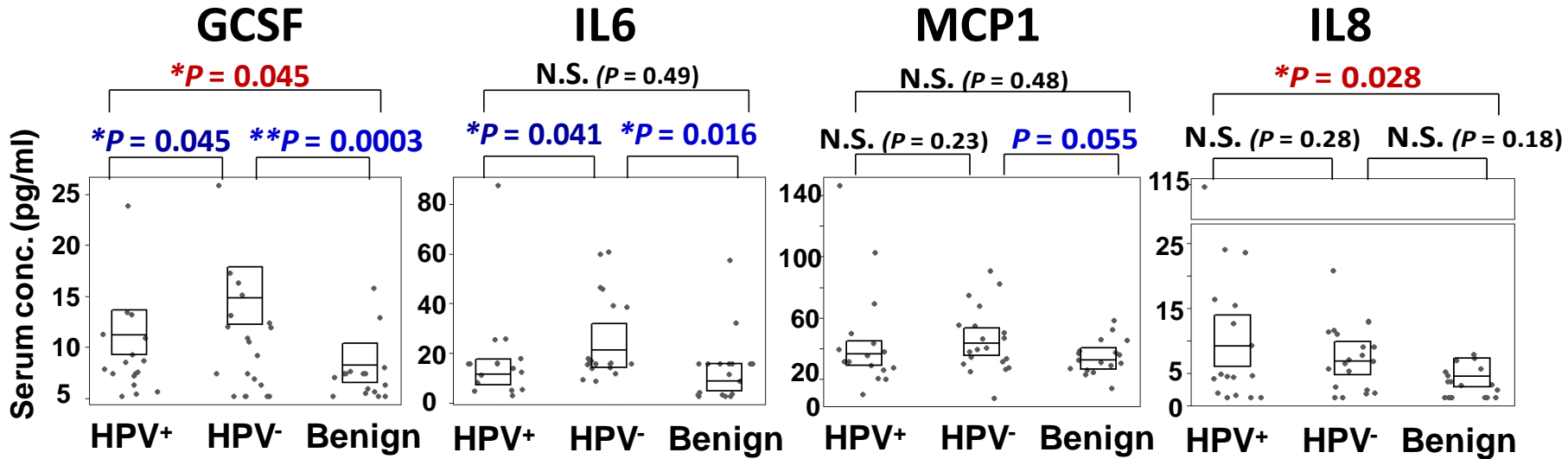
Tooth Loss at Diagnosis



Tooth Loss at Diagnosis



Serum Cytokine Differences



HPV+ : Increased GCSF and IL8

HPV- : Increased GCSF, IL6 and MCP1

Conclusions

- AA patients had a lower prevalence of HPV+ HNSCC (3/23, 13.0%), compared to stage-matched EA patients (27/51, 52.9%)
- Significantly more HPV+ patients never smoked, while significantly more HPV- patients had > 20 pack years smoking history
No differences in smoking history between EA and AA
- Significantly more HPV+ patients never consumed alcohol, while significantly more HPV- patients consumed > 7 drinks per week
No correlation between EA and AA, but there were fewer AA moderate drinkers (< 7 drinks per week)
- Significantly more HPV+ patients had no or limited tooth loss, while significantly more HPV- patients were edentulous or had < 8 teeth.
AA patients had significantly more tooth loss than EA patients.
- Serum cytokine levels differed between HPV+ and HPV- patients
Differences between EA and AA populations at risk for HNSCC?

MUSC / HCC

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