

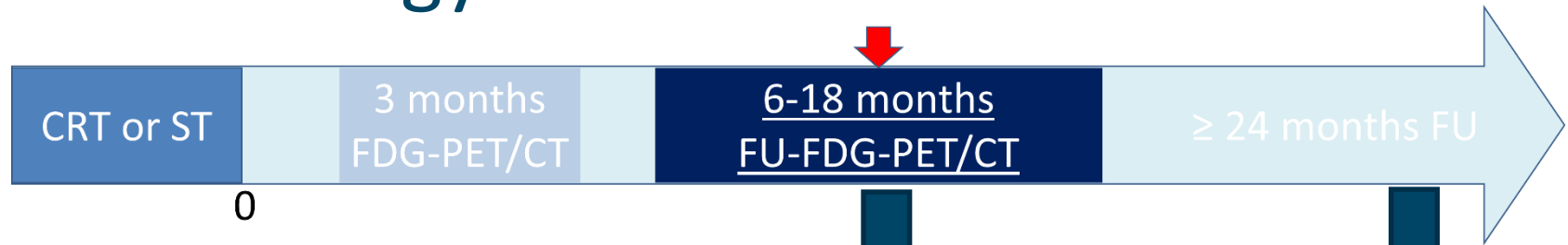
Real-life value of follow-up FDG-PET/CT (FU-FDG-PET/CT) in patients with locoregionally advanced squamous cell carcinoma of the head and neck treated with chemoradiation (CRT) or (C)RT preceded by induction chemotherapy (IC).

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Introduction and aim

- In patients with LA-HNSCC, the role of FDG-PET/CT 12 weeks after (C)RT is established (treatment response to detect residual disease).
- However, the role of FDG-PET/CT in the follow-up remains controversial.
- Aim: investigate in real-life the clinical impact of FU-FDG-PET/CT in patients with LA-HNSCC treated with CRT or IC + (C)RT.

Methodology



Patients with histological confirmed HNSCC
Treatment with CRT or IC + (C)RT
Between 6-18 months FU-FDG-PET/CT

Exclusion:

- Other indication (restaging)
- Other second tumors
- Nasopharynx carcinoma

Reports: +/-
(equivocal = +)
Reference = recurrence in
12 months or histology

Prognostic
value

Primary endpoints
Sensitivity, Specificity, NPV, PPV
on a patient level

Clinical consequences
Detected recurrence and treatment
False positive and actions

Patient characteristics (n = 73)

Table 1: Patient characteristics		n	%
Population	Women	18	25%
	Men	55	75%
	Median age	61	Range 35-80
Primary tumor	Oropharynx	35	48%
	Larynx	17	23%
	Hypopharynx	11	15%
	Unknown	5	7%
	Oral cavity	4	5%
	Sinus	1	1%
	Stage (IUCC 7)	II	1
	III	9	12%
	IVA	60	82%
	IVB	3	4%
Treatment	IC + CRT	43	59%
	IC + RT	1	1%
	CRT	29	40%
3 months FDG-PET/CT	Negative	60	82%
	False positive	6	8%
	Positive + neck dissection	3	4%
	None	4	6%
Timing FU-FDG-PET/CT	Months after treatment	12	Range 6-17
Median FU time	Months after FU-FDG-PET/CT	48	Range 2-130

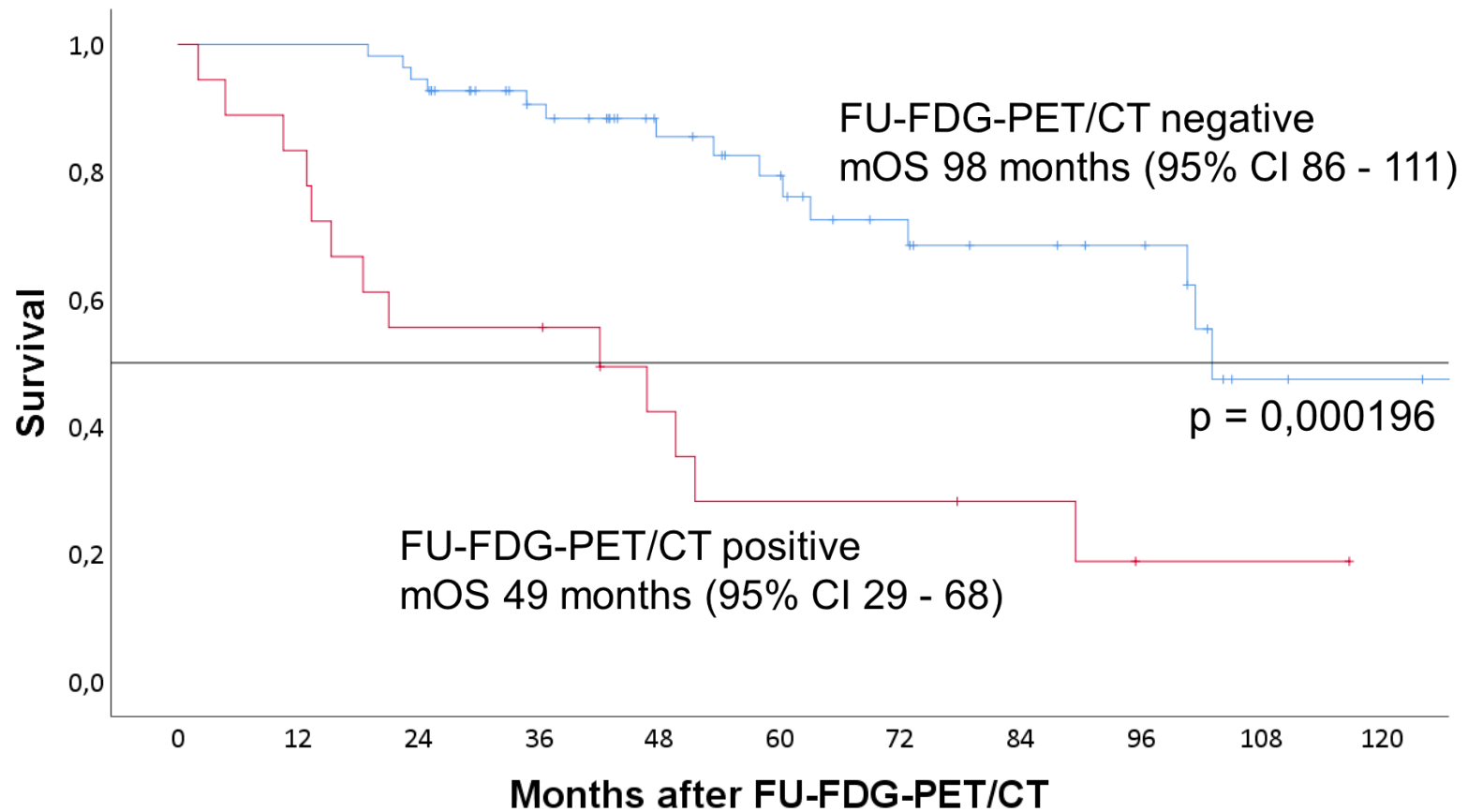
Results: diagnostic value

	Disease absent	Disease present	Total
Test -	53	2	55
Test +	8	10	18
Total	61	12	73

Test characteristic	% (95% CI)
Sensitivity	83 (52 – 98)
Specificity	87 (76 – 94)
PPV	56 (31 – 78)
NPV	96 (87 – 100)
Prevalence	16 (9 – 27)

Reference standard was histological examination in 17 (23%) and 12-months-follow-up in 56 (77%) patients

Results: prognostic value



Detected disease (true positive scans)

Detection by FU-PET/CT	Total	Curative treatment
Local recurrence	5	1 (surgery)*
Second primary	1 (trachea)	1 (radiotherapy)**
Distant metastases	4	2 (stereotactic RT)***

5 of 10 patients were asymptomatic including 2 patients treated with curative intent.

Survival after FU-FDG-PET/CT :

* 10,7 months

** 42,7 months

***13,5 and 21,3 months

False positive scans (11%)

Location	Actions
Lung	Surgery
Local	Surgery
Local + lung	MRI neck + surgery (lung)
Local + lung	Biopsy larynx + re-imaging lung
Mediastinum	Re-imaging and mediastinoscopic biopsy
Lung	Surgery
Local	FNAC equivocal => neck dissection negative
Mediastinum	Bronchoscopy + biopsy

Intervention	Number of procedures	% of population
Surgery	5	7
Biopsy	4	5
Extra imaging	3	4

Discussion

Results in concordance with literature

- Meta-analysis (*): sensitivity 92% (95% CI 91-97%), specificity 87% (95% CI 82-91%)

Strength:

- High NPV (96%)
- Significant prognostic value

Weakness:

- Only in 2 of 10 detected recurrences treatment was with curative intent
- Low PPV and 11% false positive results leading to invasive procedures

* Sheikhabaei, S., et al. AJR Am J Roentgenol, 2015. **205**(3): p. 629-39.



Conclusion

FU-FDG-PET/CT in real-life has a high NPV, but low PPV. Prognostic value of FU-FDG-PET/CT is significant.

However, false-positive FU-FDG-PET/CTs induce invasive procedures in a substantial fraction of patients.

Whether or not FU-FDG-PET/CT results in better outcome and whether or not FU-FDG-PET/CT should be used routinely in the follow-up of patients with HNSCC, remains controversial.