

Proton therapy for unresectable and medically inoperable pancreatic cancer: multi-institutional prospective results from the proton collaborative group

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PURPOSE / OBJECTIVE(S)

- Local failure represents a source of morbidity and mortality for patients with locally advanced unresectable or medically inoperable pancreatic cancer (LAPC).
- We hypothesize that proton therapy (PBT) can achieve durable local control with a reduced risk of side effects as compared to photon therapy.

MATERIAL & METHODS

- We analyzed the multicenter prospective registry of the Proton Collaborative Group (PCG) for patients with LAPC (unresectable or medically inoperable) who received definitive PBT.
- 90% of patients had adenocarcinoma histology (n=17), while two patients had either a neuroendocrine tumor or cystadenoma.
- Overall survival (OS), freedom from local-regional recurrence (FFLR), and freedom from distant metastases (FFDM) was calculated for the adenocarcinoma cohort.
- Toxicity, as per the Common Terminology Criteria for Adverse Events version 4.0, was calculated for the entire cohort.
- Descriptive statistics were used to report patient, tumor, and treatment characteristics. The Kaplan-Meier method was used to calculate OS, FFLR and FFDM.

RESULTS

Table 1:

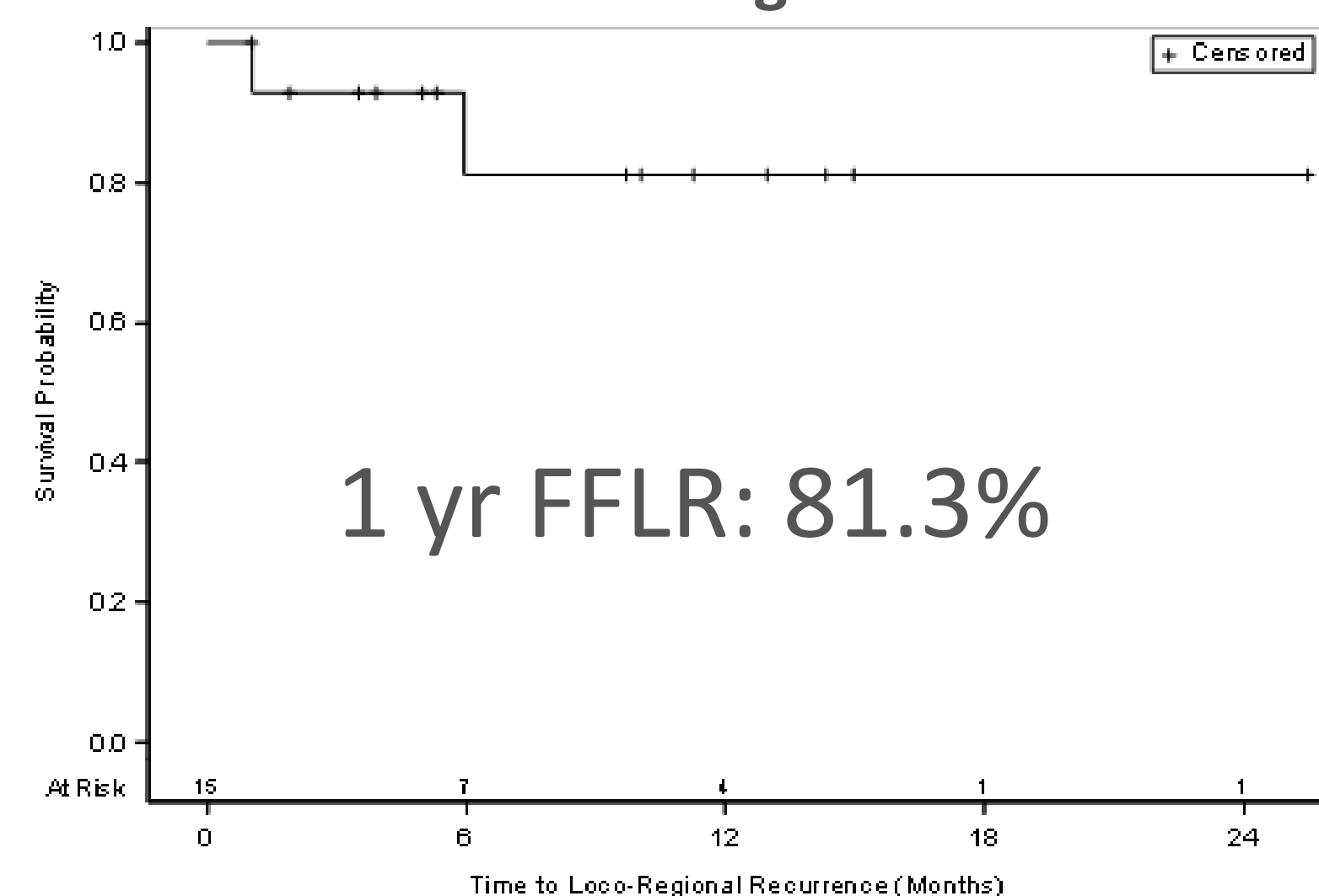
Characteristic	Patients (N=19) No. (%)
Sex	
Female	11 (57.9%)
Male	8 (42.1%)
Age	
Median	70 years
Range	37 – 88 years
Primary Location	
Body	3 (15.8%)
Head	12 (63.2%)
Tail	2 (10.5%)
Head & Body	1 (5.3%)
NOS	1 (5.3%)
Tumor Size	
Median	3.90 cm
Range	2.30 – 5.50 cm
Clinical T Stage	
T2	1 (5.3%)
T3	3 (15.8%)
T4	10 (52.6%)
Not Reported	5 (26.3%)
Clinical N Stage	
N0	8 (42.1%)
N1	5 (26.3%)
NX	6 (31.6%)
Prior Chemotherapy	
Yes	13 (68.4%)
No	1 (5.3%)
Not Reported	5 (26.3%)
Concurrent Chemotherapy	
Yes	15 (78.9%)
No	4 (21.1%)
Total Radiation Dose	
Median	54 Gy
Range	50.4 – 60 Gy

Toxicity:

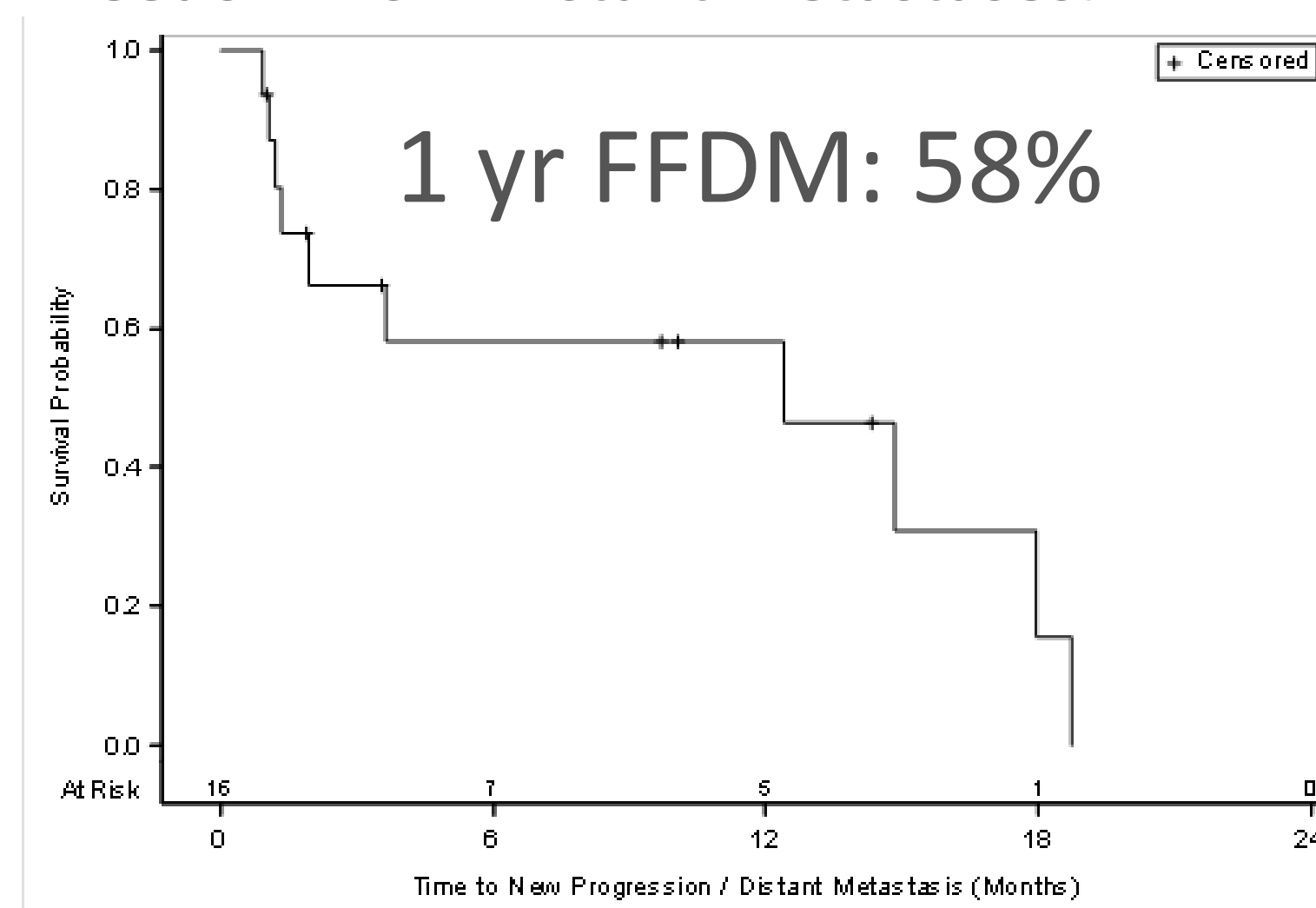
- 21% Acute Grade 2 Anorexia
- 21% Acute Grade 2 Fatigue
- 0% Grade \geq 3 acute or late toxicity**

Outcomes (w/ a median follow up of 10.0 months):

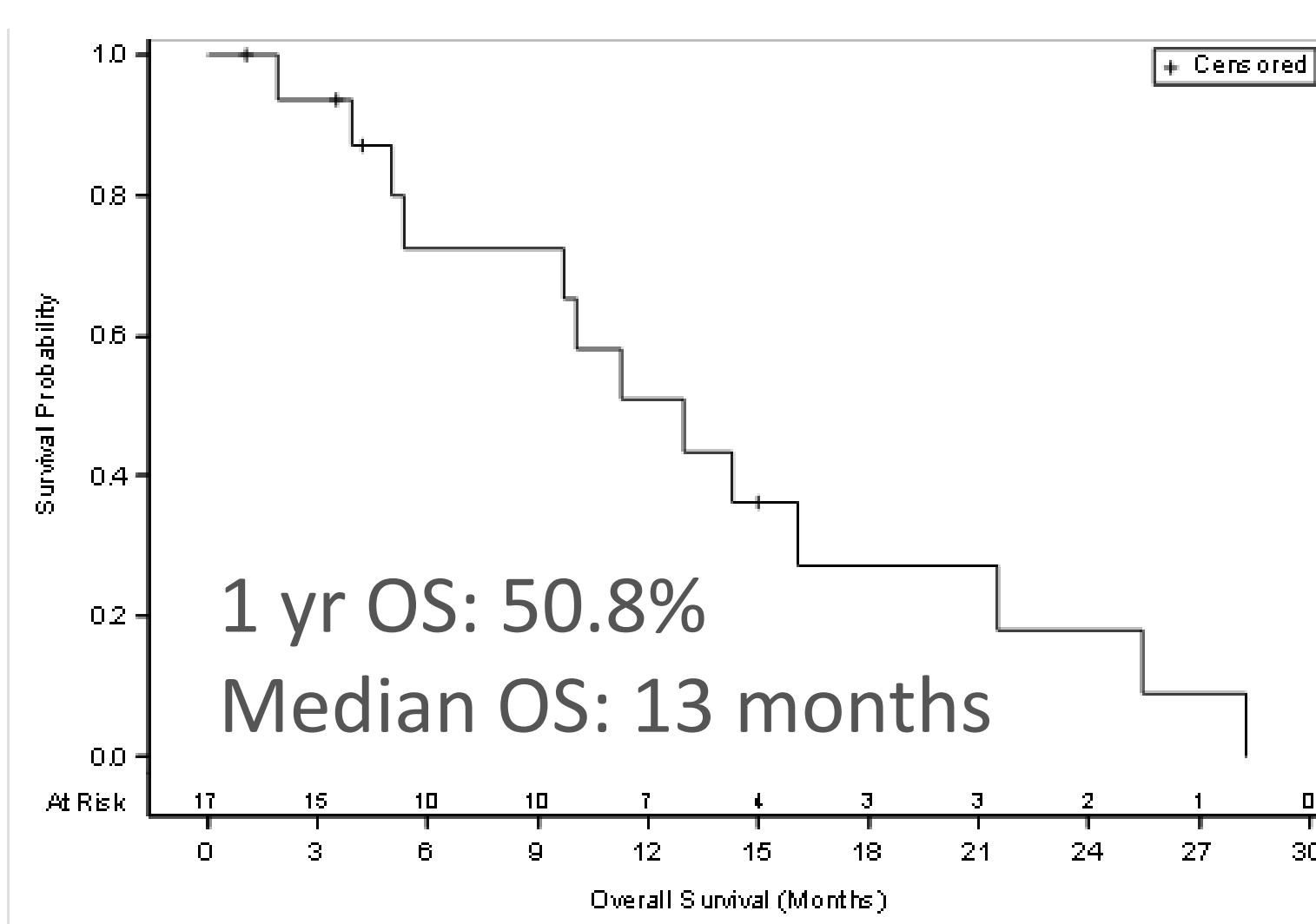
Freedom from Loco-Regional Recurrence:



Freedom from Distant Metastases:



Overall Survival:



CONCLUSIONS

This study shows excellent local control following PBT in LAPC, with a lower side effect profile than in modern IMRT photon series. Additional studies are needed to determine if PBT can further improve outcomes without adding toxicity using dose escalated strategies for LAPC.