

Toxicity results of purely accelerated radiotherapy in post-operative oral cavity carcinoma: A prospective study



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OBJECTIVES

- Large randomised trials (1, 2) have shown improved local control and disease free survival by modest acceleration using six fractions per week radiotherapy (RT) in head and neck squamous cell carcinoma patients.
- We aimed to evaluate the role of pure modest accelerated fractionated radiotherapy (**PM-AFRT**) using 6 fraction per-week in patients of post-operative oral cavity squamous cell carcinomas (OCSCC).

METHODS

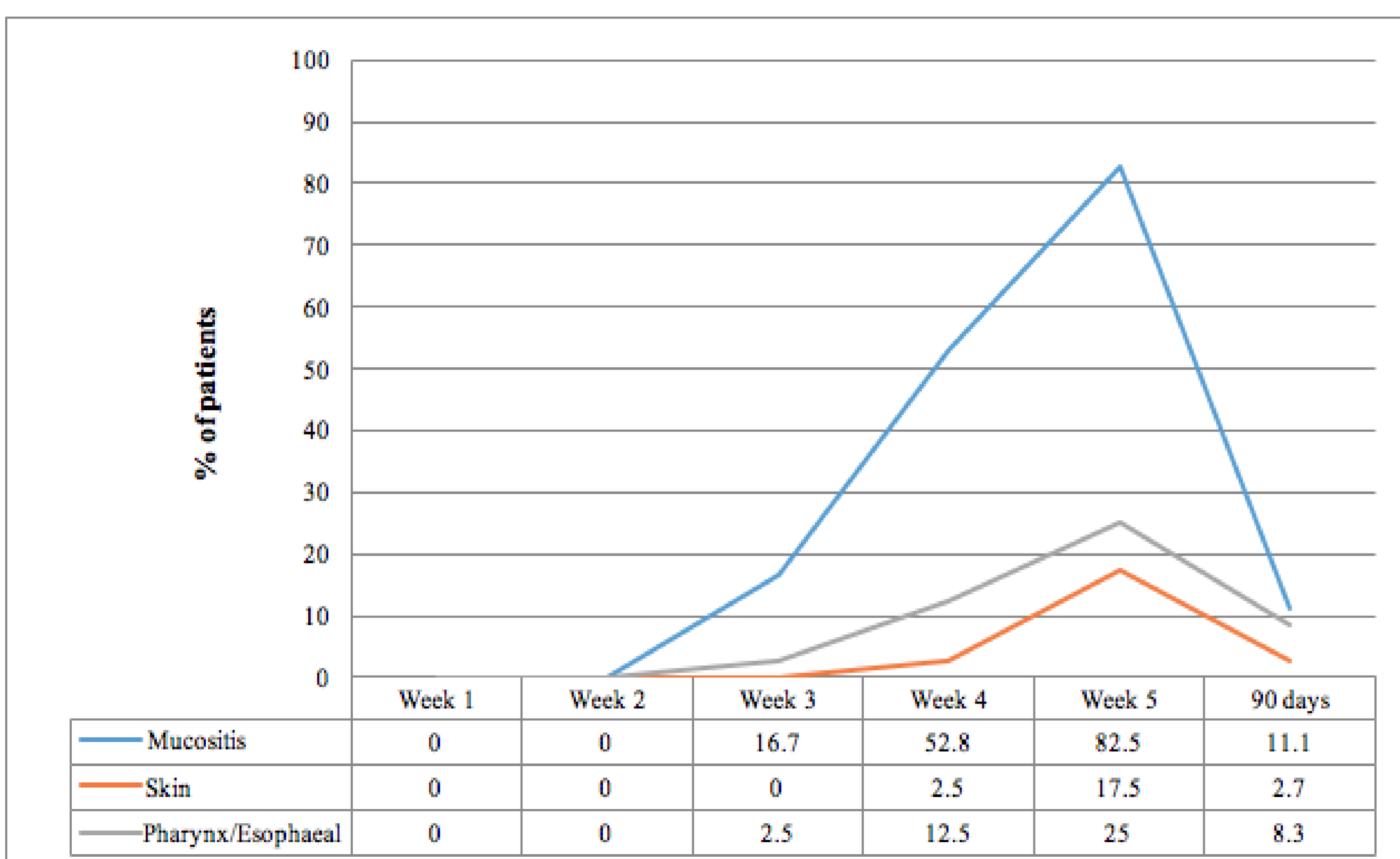
- Between May 2015 to July 2016, **40 post-operative OCSCC** patients with one or more risk factors for RT [pathological tumour size (T3/T4), node positivity pN+, perineural invasion, lympho-vascular invasion and close margin (<5 mm)] were prospectively treated with adjuvant **PM-AFRT**.
- RT dose was 60 Gy in 30 fractions over 5 weeks, delivered by 3-D conformal technique on linear accelerator.
- Acceleration consisted of a sixth 2 Gy fraction on Saturday.
- Primary end point was to assess feasibility and toxicity.
- Patients were reviewed weekly during RT and monthly thereafter, using Radiation Therapy Oncology Group (RTOG) criteria.
- Analysis of acute and late toxicity is presented. Survival analysis was done by Kaplan Meier method and all events were calculated from the date of registration.

Figure 1: Patient characteristics

Patient Characteristics	Distribution (n=40)
Median age	44 years (range 28-76)
Gender (Male: Female)	33; 7
T stage (T1: T2: T3: T4)	2.5%; 57.5%; 5%; 35%
N stage (N0: N1: N2)	72.5%; 15%; 12.5%
Overall TNM stage (I: II: III: IV)	2.5%; 32.5%; 7.5%; 57.5%
Site-wise Distribution (Tongue: Buccal Mucosa : GBS+Alveolus+RMT)	37.5%; 37.5%; 25%
Risk factors for post-operative RT (pT3 or more: pN+: PNI: LVI: Close margins)	15; 11; 10; 8; 9
Number of risk factors for post-op RT (1: 2: 3: >4)	10%; 60%; 17.5%; 12.5%
Number of positive nodes (0: 1: 2: 4+)	72.5%; 15%; 10%; 2.5%
KPS (90: 80: 70)	22.5%; 62.5%; 15%

Abbreviations: GBS – Gingivobuccal sulcus; RMT – Retromolar trigone; RT – Radiotherapy; pT – Pathological tumour size; pN – pathological node; PNI – Perineural invasion; LVI – Lymphovascular invasion; KPS – Karnofsky performance score

Figure 2: Graph showing the progression of the acute Grade 3 mucositis, Skin toxicity and pharynx and esophageal toxicity over time



RESULTS

- The median surgery-RT start time was 6.6 weeks (range 4.1-14.4).
- Grade 3 mucositis, pharynx/esophageal toxicity and skin toxicity were seen in 77.5%, 25% and 17.5% respectively.
- Two patients had grade 4 mucositis.
- No other grade 4 or grade 5 toxicity was seen.
- 23 patients received intra-venous fluid support and 57.5% were on Ryle's tube support during RT.
- All the patients were taken off Ryle's tube within 4 weeks of RT completion.
- Median RT completion time was 36 days (range 33-41). 97.5% completed RT doses as planned.
- Three patients had treatment interruptions.
- The median weight loss was 5.8% (range 1-9).
- At last follow-up, grade 3 subcutaneous toxicity and xerostomia were documented in 5% and 2.5% respectively.
- The median follow-up was 21.2 months (range 5.4–29).
- The 2-year loco-regional control rate was 87%. There were two distant failures.
- The 2-year progression free survival and 2-year overall survival rates were 83.5% and 85%, respectively.
- There were three cancer-related deaths and 3 patients died of other comorbidities.

Accelerated PORT Studies	Grade 3 Mucositis	Grade 3 Skin Toxicity	Grade 3 dysphagia
Trotti et al., 1998	69%	NA	NA
Ang et al., 2001	62%	19%	16%
Awwad et al., 2002	16%	NA	NA
Zouhair et al., 2004	22%	20%	25%
Sanguineti et al., 2005	56%	29%	10%
Suwinski et al., 2008	60%	NA	NA
Pehlivan et al., 2009	25%	15%	25%
Suwinski et al., 2016	84%	NA	NA
Our study	82.5%	17.5%	25%

CONCLUSIONS

- Reducing overall treatment time using postoperative PM-AFRT is feasible and tolerable.
- Although the acute mucositis rates were higher, all toxicities were manageable with vigilant follow-up during RT and supportive care.
- Longer follow up of our study cohort would better discern late toxicity and clinical outcomes.

REFERENCES

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