A Pilot Audit of Outcome Measures used by Speech and Language Therapy in Head and Neck Cancer Pre- and Post- Oncology Treatment.

Lee, G.[1], Sandham, J.[2], Woodman, S.[3], Srinivasan, R.[4],Tin, A.[5], Graham, K.[6]

County Durham and Darlington NHS Foundation Trust 1, 4, 6

Newcastle University 2

South Tees Hospitals NHS Foundation Trust 3, 4, 5

1) Highly Specialist Speech and Language Therapist (SLT) *lead author. 2) Student SLT. 3) Macmillan SLT 4) Head and Neck consultant 5) Consultant Oncologist 6) Clinical Audit Facilitator

Background

- Head and neck cancer (HNC) is estimated at 600,000 new cases and 300,000 deaths each year [1]
- Dysphagia and dysphonia are two of several known side-effects of oncology treatment in HNC with or without surgery [2-5]
- These side-effects impact not only the physiological deficits but also the social, emotional and psychological aspects of voice and swallowing [2 - 5]
- Therefore any outcome measures used in HNC should capture both physiologically based clinician reported outcomes and emotional / social / psychologically based patient reported outcomes.
- Evidence suggests that the impact of dysphagia and dysphonia can evolve over time. Hence outcome measures can also be used to plot the trajectory of voice and swallow recovery over time.[2- 5].
- The purpose of this audit is to evaluate a set of agreed HNC outcome measures used by SLTs across County Durham and Darlington NHS Foundation Trust (CDDFT) and South Tees Hospitals NHS Foundation Trust (STHFT). Because a more complete data set was obtained from CDDFT, this audit was based on data from this site only.

- The outcome measures used are (CR – clinician reported and PR – patient reported) : -
  - *Performance Status Scale (PSS) for diet, eating in public and understandability of speech - CR*
  - *Water Swallow Test – capacity , volume and speed - CR*
  - *MD Anderson Dysphagia Inventory – PR*
  - *Maximal Interincisal Opening (MIO) - CR*
  - *Voice Handicap Index - PR*
  - *G R B A S clinician voice perceptual ratings – CR*

- The objectives of this audit are to investigate :-
  - the outline the pattern of voice and swallow recovery in HNC after oncology treatment via outcome measures
  - which of these measures are salient in informing us of this pattern ?
  - what outcome measures are missing from the set which was agreed between CDDFT and STHFT ?

Methods

- 50 HNC patients were recruited into the data set. Out of the 50, 5 were laryngeal patients who had 4 weeks of radiotherapy and another 5 were laryngeal patients with 6 weeks of radiotherapy.
- Inclusion criteria were patients who : -

a) had a diagnosis of HNC
b) had radical radiotherapy of 6 weeks with or without chemotherapy
c) had 4 weeks radiotherapy for laryngeal cancers did not regress in their swallowing and voice recovery up to the 12 months post-treatment time point
e) were cognitively intact
f) were English speaking for the purpose of collecting outcome measures which were validated on English speaking patients.

- Outcome measures were collected at pre-treatment status and repeated post-treatment at 3, 6 and 12 months.

Table 1: No of Patients Recruited and Retained at pre-treatment, 3 months, 6 and 12 months after 6 weeks of radiotherapy or chemo-radiotherapy

45 patients assessed for baseline measures pre-treatment.	10 of these patients were having treatment at the time-point of data cut-off
28 patients assessed for 3 month outcomes.	8 patients missed. 1 patient excluded due to residual disease. 8 patients completed treatment but had not reached the 3 month time-point.
18 patients assessed for 6 month outcomes	11 patients missed. 1 excluded due to recurrence. 15 seen at 3 month but did not reach 6 month time-point at data cut-off.
17 patients assessed at 12 month time-point.	27 patients seen at 6 months but had not reached the 12 month time-point at data cut-off. 1 excluded due to recurrence.

The above table includes 5 laryngeal cancer patients who had 6 weeks of radiotherapy assessed at pre-treatment. From the 5, 3 were assessed at 3 months post-treatment, 2 at 6 months and 2 at 12 months .Not included were 5 laryngeal cancer patients who had 4 weeks of radiotherapy assessed at pre-treatment, 5 at 3 and 6 months post-treatment and 3 at 12 months.

Results of Outcome Measures at Pre-treatment, 3, 6 and 12 months post-treatment

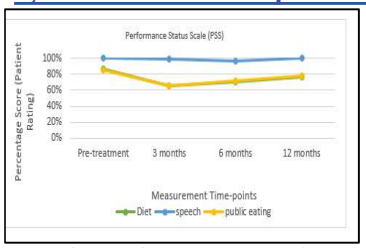

Figure 1 – PSS for normalcy of diet, eating in public and speech (averages)

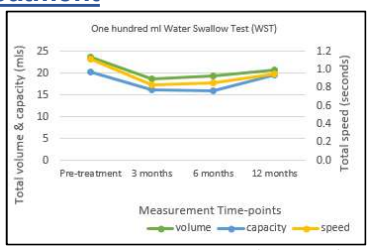

Figure 2 – The One Hundred ml Water Swallow Test (average scores for volume, capacity and speed)

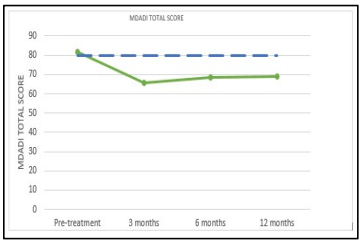

Figure 3 – Average MDADI scores at baseline and post-treatment time-points.

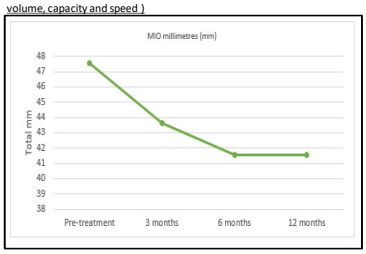

Figure 4 – Average MIO jaw opening at baselines and at 3, 6 and 12 months post-treatment

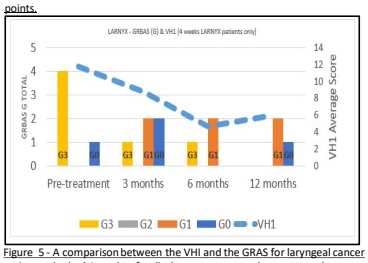

Figure 5 - A comparison between the VHI and the GRAS for laryngeal cancer patients who had 4 weeks of radiotherapy treatment (not averages)

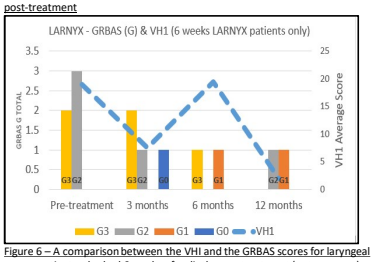

Figure 6 – A comparison between the VHI and the GRBAS scores for laryngeal cancer patients who had 6 weeks of radiotherapy treatment (not averages)

Conclusions

- The trajectory of recovery for swallowing across all outcome measures showed a gradual recovery which did not reach pre-treatment status.
- Voice recovery from 4 weeks of radiotherapy is significantly quicker than those for 6 weeks of treatment. The longer the length of treatment the more the impact of the dysphonia on life in contrasts with clinician rated perceptions of continued decrease in voice severity (Figs. 5 and 6)
- The most salient measure in the PSS is the PSS normalcy of diet. This shows a significant reduction of almost 40 % in functioning between baseline and the 3 month post-treatment time point. The PSS eating in public does not capture people who eat alone anyway even before treatment. The PSS speech is unchanged across all time points and shows no significant change (Fig. 1).
- The capacity score of the WST remained more salient than speed and volume as the former remained relatively unchanged over time and the drop in volume seems less substantial than the drop in capacity. Capacity scores showed a sharper drop in efficiency between 3 to 6 months and a higher acceleration of recovery by 12 months (Fig.2).
- The MDADI is salient as it captures patient reported ratings of how swallowing has affected their QOL across all time points with slow recovery at 12 months. Swallow recovery may be better by 12 months but it does not reach pre-treatment status (Fig. 3).
- The substantial decrease in the MIO between pre-treatment and 3 – 6 months post-treatment showed that it is a salient measure to evaluate jaw opening over time (Fig. 4).
- This audit set lacks clarity around when and if patients are able to return to oral intake vs. enteral feeding. The Functional Oral Intake Scale (FOIS) is a clinician rated measure which rates the proportion of enteral feeding vs. oral intake. This can be a useful measure to include in a future re-audit in order to evaluate when patients have their enteral feeding route removed and at which time – point post - treatment.

Limitations

- The results of this audit are based on averages for each outcome measure. It is beyond the capacity of each graph to show individual variation.
- The most important finding of this audit is that it shows a trend for change over time i.e. a trend for deterioration initially and slow recovery over time.
- It would be useful to capture aspiration risk but there is no practical measure which can be used for this. Instrumental assessments are the most obvious choice but logistically they cannot be used for every patient.

Clinical Implications

- The information gained from this audit will help HNC clinicians to develop a more profound understanding of swallow and voice recovery for HNC patients.
- The increased knowledge and understanding will help significantly in pre-treatment counselling of patients.

References

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