



Prospective study of radiotherapy of salivary glands as treatment of sialorrhea in patients with amyotrophic lateral sclerosis

Avi Assouline, MD¹, Bacem Belghith, MD², Maya Abdelnour-Mallet, PharmD³, Sylvie Delanian, MD, PhD^{1,4}, Timothée Lenglet, MD³, Gaëlle Bruneteau, MD³, François Salachas, MD³, Nadine Le Forestier, MD³, Pierre-François Pradat, MD, PhD³

¹Service d'Oncologie - Radiothérapie, Centre Clinique de la Porte de Saint Cloud, Boulogne-Billancourt, France

²Service de Radiothérapie, Institut Salah Azaiez, Tunis, Tunisia

³Département des maladies du Système Nerveux – Groupe Hospitalier Pitié-Salpêtrière, AP-HP, Paris, France

⁴Service d'Oncologie - Radiothérapie, Hôpital Saint Louis, AP-HP, Paris, France

OBJECTIVE

Estimate efficiency and tolerance of radiotherapy of salivary glands in patients with ALS.

METHODS

Prospective monocentric study in ALS patients with sialorrhea treated by radiotherapy in the Clinique De La Porte De Saint Cloud (Boulogne-Billancourt, France). Preliminary results of 40 patients treated between November 2010 and November 2011 are presented. All patients had conformational radiotherapy. Total dose was 10 Gy in 2 fractions on 3 days in 27 patients and 20 Gy in 4 fractions on 10 days in 13 patients. We used two 6 MV photon opposed beams and radiation volume including both submaxillary glands and the two thirds of both parotid glands. Patients had clinical examination at the end of treatment, one month and three months later. Efficiency of radiotherapy was evaluated with the 9-grades Sialorrhea Scoring Scale (SSS).

RESULTS

32 complete responses (SSS 1, 2) and 8 partial responses (SSS 3, 4, 5) were observed at the end of treatment. Follow-up at one month and 3 months showed a complete response in 16 and 11 patients respectively and a partial response in 16 and 5 patients. Treatment was well tolerated. Acute toxicity was observed in 15 patients : xerostomia in 3 patients, taste modification in 5 patients, pharyngeal pain in 4 patients and thick saliva in 3 patients. All side effects resolved in the days following the end of treatment. Seven patients treated at dose of 10 Gy relapsed and had a second radiotherapy at the same dose with good results.

DISCUSSION

Radiotherapy allowed a dramatic decrease or resolution of sialorrhea . Inter-individual variability explains the relapse in some patients and the dose of 10 Gy is probably not sufficient to maintain a long response. Treatment is well tolerated and toxicity is low with both doses of 10 and 20 Gy. Side effects are transitory even in patients who have a second radiotherapy.

BACKGROUND

Sialorrhea is a frequent and disabling symptom in patients with amyotrophic lateral sclerosis (ALS). Medical treatment is often poorly effective and/or not well-tolerated . Radiotherapy of salivary glands can be an interesting therapeutic option [1,2].

CONCLUSION

Radiotherapy of salivary glands in ALS patients with sialorrhea appears as a very interesting therapeutic option. A largest number of patients and a longer follow-up remain necessary to confirm these encouraging preliminary results.

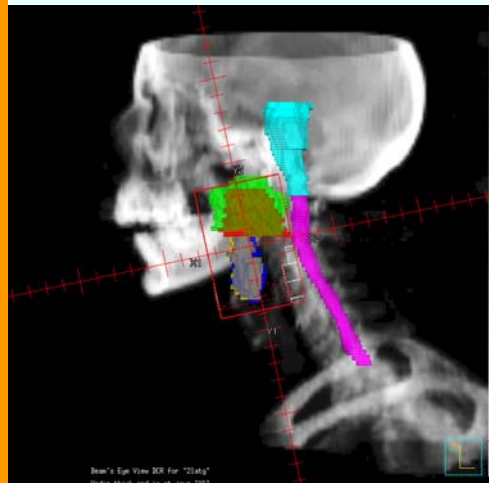


Figure 1. DRR of one Radiotherapy Field with target volumes : two thirds of both parotid glands (in green and red) and both submaxillary glands (in blue and yellow) ; spinal cord (in violet) and brain stem (cyan) were excluded of radiotherapy field

Score	Label
1	Dry, never drools.
2	Mild, only the lips are wet, occasionally.
3	Mild, only the lips are wet, frequently.
4	Moderate, wet on the lips and chin, occasionally.
5	Moderate, wet on the lips and chin, frequently.
6	Severe, drools to the extent that clothing becomes damp, occasionally.
7	Severe, drools to the extent that clothing becomes damp, frequently.
8	Profuse, clothing, hands and objects become wet, occasionally.
9	Profuse, clothing, hands and objects become wet, frequently.

Figure 2. Sialorrhea Scoring Scale (SSS)

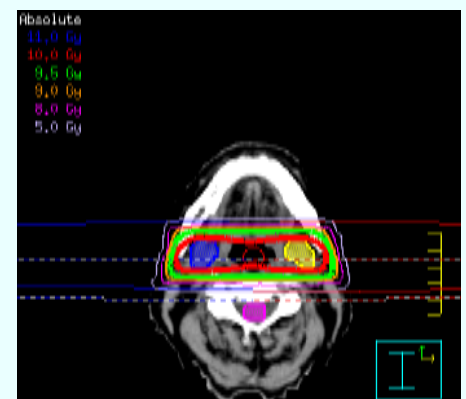


Figure 3. Dosimetric study : one slice of the dosimetric CT show isodose 9.5 Gy (95% of the prescribed dose ; green isodose) treat both submaxillary glands

REFERENCES

- [1] Borg M, Hirst F. The role of radiation therapy in the management of sialorrhea. Int J Radiat Oncol Biol Phys. 1998 Jul 15;41(5):1113-9.
- [2] Neppelberg E, Haugen DF, Thorsen L, Tysnes OB. Radiotherapy reduces sialorrhea in amyotrophic lateral sclerosis. Eur J Neurol. 2007 Dec;14(12):1373-7. Epub 2007 Oct 17.