



## PALLIATIVE CARE CASE OF THE MONTH

### Chondroradionecrosis Anoo Tamber, MD

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**Case:** Mr. Jones, a 47 year old, Caucasian gentleman, presented to the palliative care clinic at the request of his Otolaryngologist for management of severe neck and throat pain. Mr. Jones had a diagnosis of left sided laryngeal cancer and had completed surgical resection followed by radiation therapy earlier in the year. At the time of presentation the etiology of his pain was unclear. Initially following radiation therapy he experienced the typical acute mucositis related pain, which slowly resolved by the end of the summer. In the early fall he began to note a constant pain involving the throat on the right side, radiating into the jaw and right ear, and aggravated by speaking. Associated with the pain was a weakening of his voice. A course of fluconazole resulted in no improvement in the hoarseness or pain. A recent laryngoscopy had not revealed a cause and a PET CT was pending.

Initially, he was prescribed oxycodone 5mg po q3h prn but the pain began to quickly escalate. A long acting opioid, viscous lidocaine and a tricyclic antidepressant were added without much relief. A second laryngoscopy was performed and a nodule was noted on the right vocal cord and biopsied. The pathology demonstrated chondroradionecrosis.

**Discussion:** Irradiated tissue typically shows characteristic changes of atrophy, with decreased vascularity, impaired cellular proliferation, and hypoxia that can persist long after completion of radiation therapy. These tissue changes can result in chondroradionecrosis of the larynx, a devastating, potentially fatal, long term complication of radiation therapy. Chondroradionecrosis of the larynx is a rare occurrence, with an expected frequency in current practice of roughly 1%. (1) Subsequent trauma to radiated tissue, such as dental surgery, or smoking has been linked to an increased incidence of tissue radionecrosis. Chondroradionecrosis most frequently occurs within the first year of radical radiotherapy, but can develop many decades after initial treatment.

(2) Chondroradionecrosis manifests as pain and loss of phonation, with examination demonstrating edema, ulceration, poor wound healing and infection. Treatment of chondroradionecrosis is challenging and if surgery is required debridement and laryngeal preservation is the hope but ultimately total laryngectomy may be necessary. Hyperbaric oxygen (HBO) therapy is used for a number of diverse medical conditions related to tissue hypoxia. (3) In theory, HBO is helpful due to its positive impact on collagen synthesis and angiogenesis, its stimulating monocyte and fibroblast function, as well as inhibiting the growth of several bacterial pathogens. (4) The available data on the efficacy of HBO for treatment of radionecrosis are limited and conflicting. HBO therapy has been shown to prevent osteoradionecrosis when there is a planned trauma such as dental surgery. (5) Treatment of existing radionecrosis is less clear, and one randomized trial was closed prematurely due to a trend suggesting HBO was associated with worse outcomes. (6) On the other hand, a retrospective study of patients treated with HBO for radionecrosis had 75% of patients describing improvement in their presenting symptom. (7) HBO therapy is costly and time consuming, typically requiring 30 – 40 treatment sessions. The only absolute contraindication is untreated pneumothorax; relative contraindications include upper respiratory tract infections, recent ear surgery and obstructive lung disease. The most common side effects are reversible myopia and otic barotraumas. Middle ear symptoms can be alleviated by the placement of tympanostomy tubes. (8)

**Resolution of the case:** Mr. Jones was evaluated for HBO therapy and received 40 treatments. Soon after commencing hyperbaric therapy Mr. Jones noted a promising improvement in the strength and quality of his voice. Unfortunately, the pain continued to evolve and extended to his left jaw and ear.

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The ear pain he describes “as if someone was jabbing a pencil in my ear” and has not improved despite tympanostomy tubes. The pain has impacted his life in multiple domains. He has not been able to return to work as the constant pain impairs his ability to concentrate. He limits his social interactions due to the pain associated with speaking. He describes feeling trapped and depressed. His primary care physician started him on citalopram which resulted in some mood improvement. Escalation of his opioids resulted in only modest improvement in pain and significant constipation, not responsive to titration of his bowel regimen. In the hopes of improving his mood and his pain his citalopram is currently being tapered down and venlafaxine is being introduced as an antidepressant and neuropathic adjunct. A consultation to behavioral medicine was also placed. A repeat PET CT following completion of hyperbaric therapy continues to demonstrate no reoccurrence of malignancy. A subsequent laryngoscopy unfortunately now shows ulcerations along the left cord likely representing progression of the radiation induced necrosis. The palliative care team will continue to support Mr. Jones and attempt to address his physical, social, emotional and spiritual pain.

#### References:

1. Parsons F. The effect of radiation on normal tissues in management of head and neck cancer. In: Million R, Cassisi N editor. *Management of Head and Neck Cancer: A Multidisciplinary Approach*. Philadelphia: Lippincott; 1984;p. 183–184
2. Peterson DE, Doerr W, Hovan A, Pinto A, Saunders D, Elting LS, Spijkervet FK, Brennan MT Osteoradionecrosis in cancer patients: the evidence base for treatment-dependent frequency, current management strategies, and future studies. *Support Care Cancer*. 2010;18(8):1089.
3. Gill AL, Bell CN Hyperbaric oxygen: its uses, mechanisms of action and outcomes. *QJM*. 2004;97(7):385.
4. Roth RN, Weiss LD Hyperbaric oxygen and wound healing. *Clin Dermatol*. 1994;12(1):141.
5. Marx RE, Johnson RP, Kline SN Prevention of osteoradionecrosis: a randomized prospective clinical trial of hyperbaric oxygen versus penicillin. *J Am Dent Assoc*. 1985;111(1):49
6. Annane D, Depondt J, Aubert P, Villart M, Géhanno P, Gajdos P, Chevret S Hyperbaric oxygen therapy for radionecrosis of the jaw: a randomized, placebo-controlled, double-blind trial from the ORN96 study group. *J Clin Oncol*. 2004;22(24):4893.
7. Bui QC, Lieber M, Withers HR, Corson K, van Rijnsoever M, Elsaleh H The efficacy of hyperbaric oxygen therapy in the treatment of radiation-induced late side effects. *Int J Radiat Oncol Biol Phys*. 2004;60(3):871
8. Plafki C, Peters P, Almeling M, Welslau W, Busch R Complications and side effects of hyperbaric oxygen therapy. *Aviat Space Environ Med*. 2000;71(2):119.

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