



Editorial comment

Trismus—An important issue in pain and palliative care

Mads U. Werner*

Multidisciplinary Pain Center 7612, Neuroscience Center, Rigshospitalet, Copenhagen University Hospitals, Blegdamsvej 9, 2100 Copenhagen Ø, Denmark

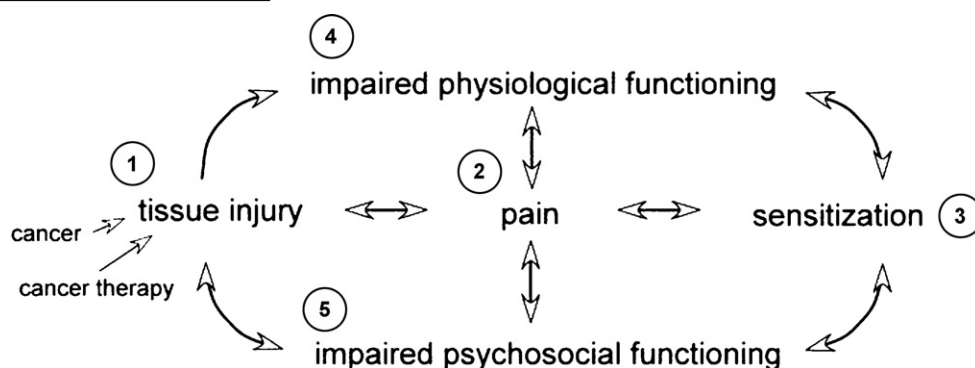
In this issue of Scandinavian Journal of Pain a multidisciplinary group of authors presents an interesting systematic review on trismus in head and neck cancer including an illustrative case report [1]. Trismus is a motor disturbance of the trigeminal nerve, especially spasm of the masticatory muscles, with difficulty in opening of the mouth (*lockjaw*),¹ and it may be caused by a number of mechanisms. Different time trajectories are evident, ranging from trismus caused by rapid injection of ultra-fast-acting opioids, malignant hyperthermia, head trauma, severe ENT-infections, tetanus, temporomandibular dysfunction and neurological diseases. Cancer related trismus is a feared complication due to recurrence of the cancer or as an adverse effect of the oncological treatment. A PubMed search January 2010 rendered on “trismus cancer” 346 cites including 40 reviews. The newest review, published 2009, included studies from 1997 to 2007 [2], while Wranic et al. cover the literature up to June 2009.

Trismus is an important topic from a pain and palliative care aspect. The present authors correctly point out that several influential international textbooks on pain and palliative medicine do not mention this complication. This has, however, been corrected for the recently published fourth edition of Oxford Textbook of Palliative Medicine (the definition of trismus is here “limited mouth closing” [3]).

In Scandinavia the standardized incidence of head and neck cancer is approximately 90–100 new cases per year per million

inhabitants, with a ratio between males and females of 2–3:1 [4,5]. The major sites of head and neck cancer are the oral cavity, the oropharynx, the larynx, the hypopharynx and the nasopharynx [2]. The management depends on site and stage of the cancer, but generally consists of surgery, radiotherapy and chemotherapy or a combination of these methods.² Although tissue preservation has a high priority in advanced cancer, oncological management and in particular radiotherapy, can irreversibly injure oral mucosa, vasculature, muscle, and bone [6]. This may, in addition to trismus, result in xerostomia, soft tissue necrosis, and osteoradionecrosis. In many patients trismus may severely compromise speech, eating, swallowing and breathing and lead to pain, malnutrition, loss of weight, aspiration and a profound reduction in quality of life [2].

What is the best available evidence for prevention and management of trismus in head and neck cancer? Unfortunately very few controlled, randomized trials are available. The technique of radiotherapy in regard to the extent of the radiation field and the number of fractions used may attenuate fibrosis of the soft tissues [1]. There seems to be moderate evidence for the efficacy of physiotherapeutic interventions including stretching and use of prosthetic aids [2,7,1]. Pharmacological controlled, randomized trials are very few and those available are low powered [7]. A number of papers have propagated for a coordinated multidisciplinary approach in research and in treatment of the head and neck cancer patient with trismus [8,2,1], but the evidence is annoyingly scarce.

DOI of refers to article: [10.1016/j.sjpain.2010.01.006](https://doi.org/10.1016/j.sjpain.2010.01.006).

* Tel.: +45 2825 7703 (mobile).

E-mail address: mads.u.werner@gmail.com.¹ <http://www.mercksource.com/pp/us/cns/cns.hl.dorlands.split.jsp?pg=ppdocs/us/common/dorlands/dorland/eight/00011180.htm>.² The National Cancer Institute's homepage <http://www.cancer.gov/cancertopics/pdq/treatment/hypopharyngeal/HealthProfessional/page4>.

It could be interesting to attend the problem of trismus and other cancer related symptoms from a more holistic perspective. The illustration shows hypothetically some of the variables and the vicious circles that are initiated by the cancer and its treatment [9–11]. Tissue injury leads to pain and impaired physical functioning. Pain-induced sensitization (“wind-up”, long-term potentiation) contains early and late components, which lead to more pain and increased reflex-induced physiological malfunctioning. The physiological deconditioning may even lead to more pain [12]. Pain and sensitization lead to impaired psychosocial functioning (sleep deprivation, fatigue, isolation, catastrophizing behaviour, anxiety and depression). All of these variables interact, but *pain* is a key factor. It is evident why the pain, starting with acute pain, slowly may become intensified and develop into chronic pain and severely may affect the individual physiologically and psychosocially. The illustration can easily be adapted to head and neck cancer and explain the multifaceted symptomatology seen in trismus. Originally the model was used to illustrate the transition from acute to chronic post-surgical pain [9–11].

A rational treatment plan should contain minimal invasive and tissue preserving therapeutic methods (1), aggressive multimodal analgesic therapy (2), antihyperalgesic agents [gabapentinoids, antidepressants, NMDA-blocking agents, α_2 -agonists (3)], rehabilitation with special emphasis on nutrition and exercise issues (4) and psychosocial support ranging from cognitive behavioural therapy to management of anxiety and depression (5).

This set up requires a multidisciplinary collaborative effort from anesthesiologists, nurse specialists, nutritionists, oncologists, palliative specialists, pain-specialists, physiotherapists, psychologist, radiotherapists, speech therapists and ENT-surgeons. Standardized care plans, protocols and clinical pathways are critical for successful implementation, as it has been in fast-track surgery [13,14]. The improvements by these programmes in perioperative care during the last decade could hopefully be translated into the general

management principles in head and neck cancer. The sooner the better—for the patient and the health care system.

References

- [1] Wranicz P, Herlofson BB, Evensen JF, Kongsgaard UE. Prevention and treatment of trismus in head and neck cancer: a case report and a systematic review of the literature. *Scand J Pain* 2010;1:84–8.
- [2] van der Molen L, van Rossum MA, Burkhead LM, Smeele LE, Hilgers FJ. Functional outcomes and rehabilitation strategies in patients treated with chemoradiotherapy for advanced head and neck cancer: a systematic review. *Eur Arch Otorhinolaryngol* 2009;266:901–2.
- [3] Murphy BA, Cmelak A, Bayles S, Dowling E, Billante CR, Ridner SH, Haman K, Bond SM, Flores AM, Wisawatapnimit P. Palliative issues in the care of patients with cancer of the head and neck. In: Hanks G, Cherny NI, Christakis DA, Fallon M, Kaasa S, Portenoy RK, editors. *Oxford textbook of palliative medicine*. Oxford University Press; 2010. p. 1145–72.
- [4] Socialstyrelsen. Cancer incidence in Sweden 2008; 2009, <http://www.socialstyrelsen.se/publikationer2009/2009-12-1>.
- [5] Curado MP, Hashibe M. Recent changes in the epidemiology of head and neck cancer. *Curr Opin Oncol* 2009;21:194–200.
- [6] Blanco AI, Chao C. Management of radiation-induced head and neck injury. *Cancer Treat Res* 2006;128:23–41.
- [7] Fietzek UM, Kossmehl P, Barthels A, Ebersbach G, Zynda B, Wissel J. Botulinum toxin B increases mouth opening in patients with spastic trismus. *Eur J Neurol* 2009;16:1299–304.
- [8] Fischer DJ, Epstein JB. Management of patients who have undergone head and neck cancer therapy. *Dent Clin North Am* 2008;52:39–60, viii.
- [9] Poleshuck EL, Dworkin RH. Risk factors for chronic pain in patients with acute pain and their implications for prevention. In: Dworkin RH, Breitbart WS, editors. *Psychosocial aspects of pain: a handbook for healthcare providers*. Seattle: IASP Press; 2003. p. 589–606.
- [10] Poleshuck EL, Katz J, Andrus CH, Hogan LA, Jung BF, Kulick DI, Dworkin RH. Risk factors for chronic pain following breast cancer surgery: a prospective study. *J Pain* 2006;7:626–34.
- [11] Katz J, Seltzer Z. Transition from acute to chronic postsurgical pain: risk factors and protective factors. *Expert Rev Neurother* 2009;9:723–44.
- [12] Terkelsen AJ, Bach FW, Jensen TS. Experimental forearm immobilization in humans induces cold and mechanical hyperalgesia. *Anesthesiology* 2008;109:297–307.
- [13] Kehlet H, Wilmore DW. Evidence-based surgical care and the evolution of fast-track surgery. *Ann Surg* 2008;248:189–98.
- [14] Kehlet H, Wilmore DW. Surgical care—how can new evidence be applied to clinical practice? *Colorectal Dis* 2010;12:2–4.