

What are your patients reading?: Assessment of common orthopedic oncology websites

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ABSTRACT

Background

“Cancer” is one of the top three health-related Internet searches. Despite being an accessible resource for therapeutic information, the quality and accuracy of medical and orthopedic literature varies, especially depending on the search term used. Websites are also frequently written at inappropriately high reading levels. In order to provide better care and guidance, it is important for clinicians to be aware of the online information available to oncology patients.

Purpose

1. Assess the content and accuracy of Internet resources available to orthopedic oncology patients.
2. Assess the readability of Internet resources available to orthopedic oncology patients.
3. Determine the influence of the search term used on the quality of resulting websites.

Patients and Methods

Three search terms (“bone tumor,” “bone cancer,” and “sarcoma”), representing choices of a patient with a newly diagnosed radiographic bone lesion, were entered into Google, Yahoo, and Bing. The results were then randomized and independently evaluated by three reviewers for accuracy and quality based on a predetermined set of scoring criteria (Table 1) and the validated DISCERN questionnaire. Website readability was evaluated with the Flesch-Kincaid (FK) score.

Results

After eliminating duplicate and irrelevant results, forty-nine unique websites were evaluated (Table 2). Preliminary results demonstrate higher quality with the search term “sarcoma” as compared to “bone tumor” based on the predetermined content scoring criteria. Quality and accuracy were both higher in resources authored by physicians as compared to non-physicians (or unverified authorship). However, the quality of treatment recommendations (as evaluated by the DISCERN instrument) was higher in websites without commercial bias or without sponsorship from a cancer treatment center. 93.8% of websites were above the 8th grade FK national average. Websites with commercial bias or related to a cancer treatment center were more readable than those without a commercial bias.

Conclusions

Online information relating to orthopedic oncology is often inaccurate and almost entirely written at an inappropriate reading level. Additionally, the search term used and authorship influence the quality and accuracy of information. Finally, those websites with associated commercial bias or related to cancer treatment centers often are more readable but provide lower quality treatment recommendations. With so many oncology patients looking to the Internet for support and information, it is imperative that clinicians are aware of the education materials available and guide their patients to the proper resources.

Table 1: Quality scoring criteria

Diagnosis

- Metastatic bone disease as most common in adults
- Discusses difference in benign vs. malignant lesions
- Discusses different diagnoses based on age
- Discusses different tools for diagnosis (X-ray, CT, MRI, bone scan, biopsy)

Anatomy

- Discusses most common bones affected (distal femur, proximal tibia, proximal humerus)
- Discusses regions of bone affected (intramedullary, cortical, metaphyseal, epiphyseal)
- Sarcomas can be aggressive and extend out of the bone

Treatment

- Treatment may involve chemotherapy
- Treatment may involve radiation therapy
- Treatment may involve surgery
- Treatment may be observation
- Surgery has two main purposes, tumor resection and reconstruction
- Sometimes treatment may be palliative instead of curative
- Patients may need stabilization if at risk for pathologic fracture
- Discusses surgical adjuvants (argon beam, phenol, liquid nitrogen)
- Surgery may be initially delayed and patient restaged after neoadjuvant therapy
- Discusses limb-salvage surgery vs. amputation
- Notes treatment is multi-disciplinary (medical oncologist, orthopedic oncologist, radiation oncologist, musculoskeletal radiologist, musculoskeletal pathologist, physical medicine and rehabilitation, pain specialist)

Complications

- Sarcoma can metastasize to other locations (commonly lungs/other bones)
- Lesions in weight-bearing bones may result in pathologic fractures
- Lesions may recur even if resected
- Patients must be monitored regularly after resection
- Surgery in children may result in growth disturbances/limb length inequality
- Wounds may become infected
- Surgery may require resection of structures such as muscles, vessels, nerves that limit future function

Score _____/25

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