

Mouth self-examination as a screening tool for oral cancer in a high-risk group of patients with Fanconi anemia

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Objective. Oral cancer usually occurs at accessible sites, enabling early detection by visual inspection. Fanconi anemia (FA) is a recessive disorder associated with a high risk of developing head and neck solid tumors. The aim of this study was to assess the ability to perform mouth self-examination (MSE) in these patients.

Study Design. A total of 44 patients with FA, aged ≥ 18 years, were given a self-reported questionnaire to collect sociodemographic data and information about health-related behaviors and oral cancer awareness. They were asked to perform MSE, which was evaluated using criteria for mucosal visualization and retracting ability. Subsequently, an oral medicine specialist clinically examined all participants, and these findings were considered to be the gold standard.

Results. The sensitivity and specificity values of MSE were 43% and 44%, respectively. The MSE accuracy was 43%. Most patients (73%) reported that MSE was easy or very easy, although 75% showed insufficient performance.

Conclusions. The accuracy of MSE alone is not sufficient to indicate whether MSE should be recommended as a strategy to prevent oral cancer in patients with FA. Nevertheless, the present results indicate that this inexpensive technique could be used as a tool for early detection of cancer in these patients. (Oral Surg Oral Med Oral Pathol Oral Radiol 2014;118:440-446)

Oral cancer usually occurs at accessible sites, allowing early detection by visual inspection. Although population studies have confirmed the ability of professional visual oral examination to reduce mortality in high-risk individuals,² studies seeking to determine the efficacy of mouth self-examination (MSE) in the prevention of oral cancer are needed.³ Public awareness about suspicious lesions may help promote early detection. MSE is considered a simple-to-perform, inexpensive technique for seeking mouth alterations and causes little discomfort.¹ However, scientific evidence for the diagnostic accuracy of MSE is scarce, with only 2 studies^{3,21} performed in high-risk groups.

Fanconi anemia (FA) is a rare disorder usually characterized by congenital abnormalities, development of aplastic anemia, and high risks of leukemia and solid tumors.^{4,5} The high risk of malignancy is a result of chromosomal instability associated with defective repair of DNA damage.⁶ The incidence of FA is 3 per 1 million, and the estimated heterozygote frequency is 1 in 300 in Europe and the United States.⁷ Most of these

patients will die at an early age as a consequence of hematologic complications, adverse effects of hematopoietic stem cell transplant (HSCT), and cancer.^{8,9} The median life expectancy for patients with FA is 25 years, but many individuals live longer.¹⁰

The risk of developing a malignancy has been estimated to be 10 000- to 15 000-fold higher in patients with FA than in the unaffected population.¹¹ A review of the literature found that an estimated one-third of patients with FA develop solid tumors, with a cumulative risk of 76%, by the age of 45 to 48 years.^{12,13} The incidences of head and neck squamous cell carcinomas (SCCs) are 800-fold higher in these individuals.^{5,12,14} The most frequent cancers (more than 40%) occurred in the aerodigestive category, consisting of SCCs of the oral, oropharyngeal, pharyngeal, and esophageal regions.¹³ HSCT can be used to correct abnormal hematopoietic cell production, but it seems to increase the risk of malignancy. The risk of neoplastic disease is even higher in patients with FA who receive HSCT and present oral complications of graft-vs-host disease (GVHD). Long-term exposure to immunosuppressive drugs used for

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Received for publication Mar 19, 2014; returned for revision Jun 23, 2014; accepted for publication Jun 25, 2014.

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2212-4403/\$ - see front matter

<http://dx.doi.org/10.1016/j.oooo.2014.06.012>

Statement of Clinical Relevance

The study indicates that mouth self-examination, an inexpensive and noninvasive technique, could be used as a tool for secondary oral cancer prevention in patients with Fanconi anemia, who have a progressively higher risk of developing oral cancer over time.

prophylaxis and treatment of GVHD is also described as an important risk factor for SCC.^{4,15,16} A 2- to 4-fold increased risk and earlier development (mean range, 18-33 years) of head and neck SCC have been reported in patients with FA after HSCT compared with those who receive no transplant.^{12,17,18}

Solid cancer management is more difficult in patients with FA than in the general population because of their increased sensitivity to chemotherapy with DNA cross-linkers and the variable but potentially increased side effects from radiotherapy. Surgery remains the mainstay and only curative treatment.^{5,13,16} Post-HSCT oral cancer is associated with a poor prognosis in patients with FA. Until the development of better therapies, surveillance to detect changes in mucosal color or texture is the most prudent approach. The oral mucosa of patients with FA should be professionally examined at least every 6 months, and these visits should include instruction in maintaining excellent oral hygiene. These patients should receive information on the risk of oral cancer and be taught to perform MSE and report suspicious lesions. Some authors have recommended more frequent (every 3 months) examinations for patients with high-risk oral lesions, such as leukoplakia or chronic GVHD, and a history of total-body irradiation.^{19,20}

Careful oral screening in patients with FA has been considered essential for the discovery of potentially malignant lesions in the oral mucosa, and it may improve survival or at least reduce the need for more aggressive surgical approaches.⁵ However, few studies have assessed primary and secondary oral cancer prevention strategies for these patients. The aim of this study was to assess the ability of patients with FA to perform an MSE in comparison with an examination by an expert clinician.

MATERIALS AND METHODS

Participants

This study was approved by the Brazilian National Research Ethics Committee (CONEP/CAAE: 23496313.9.0000.0102). Patients with FA aged ≥ 18 years who were being managed on an outpatient basis at the Bone Marrow Transplant Unit of the Federal University of Paraná Hospital, Curitiba, Paraná, Brazil, were invited to take part in this study during routine appointments. Participants were given written information about the study and provided written informed consent.

Procedure

Participants were asked to fill out a self-reported questionnaire with 2 sections. About 10 minutes were required to complete the entire questionnaire. The first section solicited personal and sociodemographic data

(age, gender, skin color, education level, marital status, and socioeconomic status) and information about health-related behaviors, such as tobacco and alcohol use. The second section was used to collect key information about the participants' knowledge, experience, and awareness of oral cancer. The questions about previous experience with MSE were: (1) whether any dentist or doctor had ever looked for oral cancer in their mouth at any time; (2) whether someone had showed them how to perform an MSE; and (3) whether they ever self-examine and had found any alteration before.

Before professional clinical examination, the participants were asked to wash their hands and perform MSE in front of a standard 1 m \times 30 cm mirror in an artificially illuminated room. Patients did not use any tool to aid the examination (such as gauze, penlight, or oral retractors). The goal was to simulate the reality of an examination carried out at home. The researcher remained in the room to observe MSE performance but did not assist the participants during the procedure. The same researcher evaluated aspects of MSE performance (mucosal visualization and retracting ability, levels of attention and difficulty, and time spent) using a 5-point Likert scale ranging from 1 (worst performance) to 5 (best performance). The evaluation criteria are described in detail in [Table I](#).

Immediately after MSE, participants were asked to answer questions about the presence and location of oral lesions. They were also asked to rate the perceived difficulty of MSE on a categorical response scale ranging from 0 (very easy) to 5 (very difficult), adapted from Scott et al.³ An experienced oral medicine specialist then clinically examined all participants. The dentist directly inspected the oral mucosa using gloves and an artificial light reflector. The presence (including site and provisional diagnosis) or absence of potentially malignant oral lesions (ulcers, white or red patches, or lumps/swellings) was registered in the patients' clinical charts.

Finally, all participants were taught to perform MSE correctly using verbal and demonstrative instruction with the support of an educational banner and a pamphlet. They were alerted about the risks of premalignant lesions and taught to correctly recognize them. The patients with suspicious lesions underwent an immediate cytologic and DNA flow cytometry examination, and the clinical decision to biopsy was discussed with each patient.

Statistical analysis

MSE performance data were cross-tabulated with demographic variables to identify factors associated with the participants' ability to identify lesions by MSE and the quality of MSE technique. The χ^2 test and the Freeman-Halton extension of the Fisher exact test were

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