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Periodontal disease as a risk factor for breast cancer: A case–control study based on a comprehensive clinical periodontal evaluation

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Objective: The objective of this study was to evaluate the risk association related to periodontal disease and breast cancer performing a prospective case-matched control study. **Methodology:** It was a prospective controlled study, performed to evaluate the possible association with Parkinson's disease (PD) and breast cancer. The Institutional Board for Ethics in Research approved the study (CAAE: 08989019.9.0000.5437). This case–control was designed as a 1:1 propensity study that included 64 volunteers with breast cancer before treatment and 64 women volunteers with no cancer. The cases and matched controls were recruited from the Barretos Cancer Hospital. For matching, cases and controls were matched by age, income of families, education, and smoking status (considered former smoker or current smoker). All of the patients interviewed participated voluntarily and signed an informed consent form. For both groups, women, over 40 years old, have at least 17 teeth, no history of familial breast cancer, no prior cancer, and no history of breast cancer in the family. For the case group, patients with breast cancer diagnosis and who knew about their breast cancer diagnosis were included. For the control group, patients without cancer diagnosis and normal mammographic examination, or if altered, the final finding, showing the absence of neoplasm or risk for breast cancer, were included. For data collection of periodontal parameters, the instrument available in the online version through the website Periodontalchart-online.com/pt developed by the University of Bern, Switzerland, was used. Periodontal indices were measured with the aid of a model periodontal probe from the University of North Carolina. PD indices were considered according to the parameters described by the American Academy of Periodontology. **Results:** A total of 128 research participants were included in the study, in two groups, 64 participants without cancer (control group) and 64 patients with breast cancer (case group). The groups were similar related to age, income, education, and smoking. Evaluating oral health parameters, the groups were different. Case groups were associated with better related to the frequency of tooth brushing per day and daily mouthwash uses but worse oral parameters evaluated by mean plaque index, bleeding on probing, and periodontal probing depth. PD was significantly associated with BC for all case definitions ($p < 0.001$). In the multivariable analysis, periodontitis was significantly associated with breast cancer in a sample of severe and moderate periodontitis. Women diagnosed with moderate periodontitis have four times higher odds of having breast cancer than women without periodontitis. Women with severe periodontitis have 10 times higher odds of having breast cancer. **Conclusion:** There is a possible increased risk of breast cancer diagnosis in women with active PD when compared with women without PD. Researchers have developed studies with the referred objective as an alternative to carry out the prevention of pathologies through an important oral health action. New studies need to be carried out to corroborate the findings to formulate public health policies.

Keywords: breast neoplasms; periodontal disease; odds ratio; observational study; case-control studies.