

Press Release
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Multiple Tooth Loss Can Be A Sign of Cognitive Impairment

A study by the Faculty of Dentistry at the University of Hong Kong has revealed that multiple tooth loss and its related oral diseases could be linked to the development of vascular cognitive impairment (VCI) in stroke patients.

Tooth loss in adults worldwide, particularly in elderly population, is primarily caused by severe periodontitis, a common peripheral infection and inflammation that results in the destruction of tooth-supporting tissue and alveolar bone. Periodontal disease is also related to systemic inflammation, which the latter is a well-documented risk factor, among others, for Alzheimer's diseases and vascular diseases.

Professor Lijian Jin, Clinical Professor in Periodontology at the Faculty of Dentistry, points out that multiple tooth loss did not only indicate poor oral health, but could be a sign of Alzheimer's disease or dementia.

The study, the first of its kind, was carried out by the Hong Kong dental school at the University of Hong Kong in collaboration with the Affiliated Yuebei People's Hospital of Shantou University Medical College, in which 161 patients (mean age 63.8) with acute ischemic stroke in Shantou were examined and evaluated for medical, oral and cognitive conditions.

The study found that ischemic stroke patients who had a higher amount of tooth loss (≥ 8) tended to get a lower scores (≤ 20.0) on the Montreal Cognitive Assessment (MoCA), indicating more serious cognitive impairment, compared to patients with fewer tooth loss (≤ 7), (13.2 vs 17.3, $p < 0.001$).

The subjects with higher number of missing teeth (≥ 8) also exhibited a significantly higher proportion of vascular cognitive impairment (VCI) than those with fewer missing teeth (≤ 7) (87.3% vs. 61.0%, $p < 0.001$).

The findings of the study showed that apart from stroke history, the number of multiple loss (≥ 8) could be an independent risk factor of vascular cognitive impairment in subjects with acute stroke.

The association between the number of tooth loss and VCI ($p < 0.01$) in the subjects remained statistically strong even after confounding factors like gender, congenital heart defect, smoking status, drinking habit, total cholesterol and low-density lipoprotein were adjusted.

Professor Jin said the finding is consistent with some emerging studies around the world that showed a relationship between tooth loss and cognitive function.

Professor Jin said there are some potential pathways that account for the association of multiple tooth loss with cognitive impairment in subjects with acute ischemic stroke.

“Currently, the well-documented risk factors for Alzheimer’s disease include cerebrovascular disease and its related vascular risk factors, and many of them are significantly associated with systemic inflammation that links to periodontitis and other oral diseases,” he said.

He said periodontal disease and other oral diseases can increase the systemic level of inflammation, and may contribute to the development of cognitive impairment.

Another possible factor underlying the connection between multiple tooth loss and cognitive decline was reduced mastication, due to edentulousness.

He said edentulousness could have an impact on normal chewing function, which helps maintain the sensory input from the periodontal mechanoreceptors around the tooth roots and transmits spatial information of tooth loading to the brain and maintains the neuronal activity. Some evidences have suggested a possible connection between brain function and mastication.

This was further supported by animal studies which connected reduced mastication due to tooth loss to impairment of spatial memory, weakening of learning ability and degeneration of hippocampal neurons in the brain.

While the findings may point to the fact that tooth loss and its related oral diseases could be a risk factor contributing to cognitive impairment, Professor Jin called for the prevention of oral diseases and possible health benefits of providing holistic oral care and regular supportive periodontal care in ageing populations.

Reference:

Zhu J et al.(2015) "Multiple tooth loss is associated with vascular cognitive impairment in subjects with acute ischemic stroke", Journal of Periodontal Research, Res 2015: 50: 683 – 688.

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