Do You Know What's In Your Mouth?

Untreated gum disease is believed to be one of the causes of dementia, suggesting that oral health is not only about your breath and smile.

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Two-thirds of seniors have gum disease, and no existing treatment reverses the process. What's more, gum disease is linked to a higher risk of other conditions, including dementia, diabetes and heart disease.

And a growing number of researchers are linking untreated gum disease to the development of Alzheimer's, as New Scientist reported earlier this year. This suggests that restoring oral health could not only spare your kidneys, eyes and heart but also your brain.

More curious still, University of Washington's Matt Kaeberlein started looking at the effect of the anti-rejection drug rapamycin on the mouth when a post doc steeped in dentistry, joined his team. The transplant drug previously reported to show anti-aging properties had also been shown to rejuvenate the oral health of old mice. The researchers found that mice given rapamycin all their lives had more bone around their teeth. So they gave mice aged 20 months – elderly in mouse terms – food with added rapamycin for eight weeks, and compared their oral health with that of mice not given the drug. The team saw bone growth in the mice's mouths, as well as a decline in disease-associated bacteria that become more common in older animals. These include Porphyromonas gingivalis, which is a suspected cause of Alzheimer's.

The drug, a macrolide that appears to block T and B cell signaling via IL-2 inhibition, strangely enough regenerated the bone in which teeth are embedded, and restored the mouth microbiome to a youthful state and reduced inflammation. It isn't clear though that it has the same effect in humans. And even if it does, the drug can have many undesirable side effects. As a transplant rejection drug, it suppresses the immune system.

Several groups are creating variants of rapamycin that are designed to minimise undesirable effects, and some are being trialled in people. It is possible these drugs will have the same benefits for oral health that were seen in mice. Kaeberlein is carrying out another mouse study designed to reveal if applying rapamycin just to the mouth, rather than to the entire body, has the same effect. He also hopes to run a trial in people. Using a lower dose than that given to people with transplanted organs might minimise side effects, he says.

Read the original paper at https://www.biorxiv.org/content/10.1101/861369v1

Mike Barr, a long ago Poz Senior Contributing Editor and founding member of and scribe for the Treatment Action Group (TAG), is a functional medicine practitioner, acupuncturist and herbalist in NYC. Reach out to him here.

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