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Letter to the Editor

Comments on: The Oral Microbiome in Amyotrophic Lateral Sclerosis Shows Differentially Abundant Organisms in Limb Versus Bulbar Onset Disease: A Binational Study

Josef Finsterer
Department of Neurology, Neurology & Neurophysiology Center, Vienna, Austria

Corresponding Author: **Josef Finsterer**

Letter to the Editor

We read with interest the article by Jacoba *et al*. on a prospective binational study of differences in the oral microbiome between patients with limb-onset and bulbar-onset ALS in 59 ALS patients recruited in Calgary and Seoul [1]. Significant differences in the diversity of the oral microbiomes between limb-onset and bulbar-onset ALS patients were found, with two bacterial genera occurring at different frequencies between these two groups [1]. Bifidobacteriaceae Bifidobacterium was more common in cases with bulbar onset, while Pasteurellaceae Haemophilus was more common in cases with limb onset [1]. Among the household pairs, the ALS participants differed from the control participants at the Seoul site [1]. It was concluded that differences in the frequency of oral microorganisms may be involved in the variable phenotypic expression of ALS as bulbar and limbic forms [1]. The study is interesting, but some points need clarification and should be discussed.

The first point is that it is not clear why the El Escorial criteria were used to diagnose ALS. The disadvantages of the El Escorial criteria are their low sensitivity, especially in the early stages of the disease, and their complexity in clinical application [2]. The El Escorial criteria date back to 1990, but have since been replaced by more accurate criteria [2]. The most commonly used diagnostic criteria today are the Gold Coast criteria established in 2020 [3]. The advantages of the Gold Coast criteria are their higher diagnostic sensitivity compared to older criteria, which enables earlier diagnosis of ALS and extends their suitability for clinical trials [3]. Only patients who meet the Gold Coast criteria should be included.

The second point is that it was not specified whether the criteria used to diagnose ALS were identical at the Calgary site and the Seoul site. Confirmation that ALS was diagnosed according to the same criteria is important, as different diagnostic criteria would result in two different cohorts.

The third point is that several factors influencing the composition of the oral microbiome have not been sufficiently considered and defined as inclusion or exclusion criteria. In addition to oral or pulmonary infections, the use of antibiotics, non-invasive ventilation, tube feeding, and the need for a liquid diet, the composition of the oral microbiome can also be influenced by comorbidities, the extent of caries, the presence of periodontitis, other concomitant medications besides antibiotics, the type of toothpaste or mouthwash used, the type and amount of dentures, immunological status, the extent of salivation, gastric reflux, and the stage of ALS. The oral microbiome is also strongly influenced by age, genetics, hormones, saliva volume and composition, diet, smoking, alcohol, pregnancy, and the environment [4]. In terms of diet, high sugar/carbohydrate intake promotes acid-loving bacteria, while a high-fiber diet is beneficial. In terms of saliva, flow rate and pH are crucial, as abundant saliva helps buffer acid and promote remineralization. In terms of oral hygiene, plaque (biofilm) is removed by brushing, flossing, and tongue cleaning. Medications other than antibiotics that can alter the oral microbiome include proton pump inhibitors, metformin, steroids, selective serotonin reuptake inhibitors, statins, beta blockers, ACE inhibitors, and even some psychotropic drugs, which can lead to shifts in bacterial diversity, potential overgrowth of pathogens, and altered drug responses [5]. As long as these additional confounding factors have not been taken into account in the analysis, the interpretation of the results may be misleading.

Overall, before concluding that the oral microbiome differs in bulbar and limb-onset ALS, all factors that influence the composition of the oral microbiome must be taken into account and the diagnostic criteria for ALS must be updated.

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References
1. Jacoba SM, Sonb B, Bagherid S, Leea S, Leckiea J, Chohana B, *et al*. The Oral Microbiome in Amyotrophic Lateral Sclerosis Shows Differentially Abundant Organisms in Limb Versus Bulbar Onset Disease: A Binational Study. J Clin Neurol. 2026; 22(1):66-75. Doi: 10.3988/jcn.2025.0219
2. Agosta F, Al-Chalabi A, Filippi M, Hardiman O, Kaji R, Meininger V, *et al*. WFN Research Group on ALS/MND. The El Escorial criteria: Strengths and weaknesses. Amyotroph Lateral Scler Frontotemporal Degener, Mar 2015; 16(1-2):1-7. Doi: 10.3109/21678421.2014.964258
3. Shefner JM, Al-Chalabi A, Baker MR, Cui LY, De Carvalho M, Eisen A, *et al*. A proposal for new diagnostic criteria for ALS. Clin Neurophysiol, Aug 2020; 131(8):1975-1978. Doi: 10.1016/j.clinph.2020.04.005
4. Li X, Liu Y, Yang X, Li C, Song Z. The Oral Microbiota: Community Composition, Influencing Factors, Pathogenesis, and Interventions. Front Microbiol, Apr 29, 2022; 13:895537. Doi: 10.3389/fmicb.2022.895537
5. Vich Vila A, Collij V, Sanna S, *et al*. Impact of commonly used drugs on the composition and metabolic function of the gut microbiota. Nat Commun. 2020; 11:362. Doi: https://doi.org/10.1038/s41467-019-14177-z