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Periodontal disease in Systemic Lupus Erythematosus; Is there a link?

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Abstract:

Background: An association has been demonstrated between periodontal disease (PD) and rheumatoid arthritis. Less data is available for systemic lupus erythematosus (SLE) but on meta-analysis of eight studies including 1,383 participants, risk of PD in SLE cases compared to controls was significantly greater with a risk ratio of 1.76 (95% CI 1.29-2.41, p=0.0004). Our objective was to assess PD severity in participants with SLE in a London tertiary centre.

Methods: SLE patients (Diagnosis by rheumatologist + Anti dsDNA/Anti Sm positive) were compared to healthy controls and non-inflammatory osteoarthritis (OA) control patients. Measures of periodontal disease were ascertained by a blinded examiner. Periodontitis was defined according to Eke & Page classification. Kruskal-Wallis test and Chi-square test were applied to test numerical and categorical data respectively. Spearman's correlation and linear regression were used to test for correlations.

Results: 100% of participants in the SLE and controls groups had either mild, moderate or severe periodontitis. All measures of PD were similar in the three groups (Table 1)

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	SLE	Healthy	Osteoarthritis	P value
Characteristics, n=	18	14	15	
Females, n (%)	17 (94%)	14 (100%)	11 (73%)	ns
Age	45.5 (35-64)	47.5 (39-57)	64 (60-70)	SLE vs OA p<0.0001
SLE duration (years)	6.5 (3.8-16.8)	-	-	
SLEDAI	2 (2-6)	-	-	
BILAG As	0%	-	-	
Steroid use (%)	22%	-	-	
DMARD use (%)	78%	-	-	
Periodontitis, n=	14	13	13	
Normal, n (%)	0 (0%)	0 (0%)	0 (0%)	
Mild, n (%)	1 (7%)	0 (0%)	0 (0%)	
Moderate, n (%)	11 (79%)	11 (85%)	8 (62%)	
Severe, n (%)	2 (14%)	2 (15%)	5 (38%)	ns
Measures PD				
Plaque index	25.5 (15.3-52.0)	20.8 (9.3-31.0)	34.6 (27.8-53.1)	ns
Bleeding on probing	4.7 (2.3-33)	7.7 (3.0-13.7)	9.2 (5.4-27.8)	ns
Mean probing depth	2.4 (2.3-2.7)	2.5 (2.3-2.6)	2.4 (2.3-2.8)	ns
Mean clinical attachment loss	2.9 (2.7-3.5)	2.9 (2.8-3.0)	3.2 (2.9-3.9)	ns
Missing teeth	5 (3.8-10.3)	4 (2-6)	8 (3.5-9.5)	ns

Table 1: Demographics and results of periodontal examination in SLE patients and control groups. Values expressed as median (IQR), ns=non-significant at p=0.05

On subgroup analysis of SLE patients, there was a significant correlation between ESR and bleeding on probing (r^2=0.64, p=0.015). This was still significant after adjustments for BILAG and SLEDAI 2K.
Conclusion: PD severity was similar in SLE patients and healthy controls, in contrast to the results of our meta-analysis. Possible explanations include the high rates of PD in all participants, mild disease severity in SLE patients and small sample size. Larger studies in this population are needed to elucidate the relationship further. OA patients had greater prevalence of severe periodontitis but this may be accounted for by age, a known risk factor for PD. ESR correlated with bleeding on probing independent of SLE severity. We suggest that SLE patients should be offered a dental assessment, especially if ESR is high.
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