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·临床研究·

口腔扁平苔藓与桥本甲状腺炎及其抗甲状腺抗体关联性的病例对照研究

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【摘要】 目的 探讨口腔扁平苔藓(oral lichen planus,OLP)与桥本甲状腺炎(Hashimoto's thyroiditis，HT)及其抗甲状腺抗体之间的关联性,为OLP患者的甲状腺疾病筛查提供临床依据。**方法** 本研究通过单位伦理委员会审批。共纳入125例经临床和组织病理学确诊的OLP患者作为病例组,与125例性别和年龄匹配的非OLP受试者作为对照组。收集两组人群的性别、年龄、病损类型及病程等基本信息,并进行抗甲状腺过氧化物酶抗体(thyroid peroxidase antibodies，TPOAb)和抗甲状腺球蛋白抗体(thyroglobulin antibodies，TgAb)的血清学检测,分析不同性别、年龄、病损类型及病程的OLP患者与抗甲状腺抗体的关系。**结果** OLP患者中HT的患病率为31.20%,显著高于对照组(9.60%)(χ^2=18.504,P<0.001);女性OLP患者中HT的患病率(39.13%)显著高于男性患者(9.09%)(χ^2=10.93,P<0.001);OLP患者的TPOAb阳性率(17.6%)显著高于对照组(4.0%)(χ^2=10.989,P<0.001),女性患者的TPOAb阳性率(22.83%)显著高于男性(3.03%)(χ^2=5.210,P=0.014);OLP患者的TgAb阳性率(7.2%)与对照组(3.2%)相比差异无统计学意义(P>0.05)。糜烂型OLP患者的TPOAb阳性率25%(17/68)高于非糜烂型OLP患者8.77%(5/57),差异有统计学意义(χ^2=4.831,P=0.028)。通过Logistic回归分析发现,女性OLP患者TPOAb阳性的风险是男性OLP患者的8.935倍(OR=8.935,95%CI:1.134-70.388，P=0.038);糜烂型OLP患者TPOAb阳性的风险是非糜烂型的3.199倍(OR=3.199,95%CI:1.064-9.618，P=0.038)。**结论** OLP患者中HT的患病率高,女性和糜烂型OLP患者中抗甲状腺抗体的阳性率较高,提示在OLP患者的临床管理中应考虑甲状腺疾病的筛查,尤其是对于女性和糜烂型OLP患者。

【关键词】 口腔扁平苔藓；桥本甲状腺炎；自身免疫性疾病；抗甲状腺抗体；抗甲状腺过氧化物酶抗体；抗甲状腺球蛋白抗体；抗体滴度；糜烂型病变；免疫机制
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A case-control study on the association of Hashimoto's thyroiditis and anti-thyroid antibodies with oral lichen planus

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【**Abstract**】 **Objective** This study aims to explore the association between oral lichen planus (OLP) and Hashimoto's thyroiditis (HT) and its anti-thyroid antibodies to provide clinical evidence for thyroid disease screening in patients with OLP. **Methods** This study was approved by the institutional ethics committee. A total of 125 clinically and histopathologically confirmed patients with OLP were enrolled as the case group, and they were matched with 125 non-OLP controls based on sex and age. Demographic data (gender, age, lesion type, and disease duration) were collected from both groups. Serum levels of thyroid peroxidase antibodies (TPOAb) and thyroglobulin antibodies (TgAb) were measured to analyze their associations with sex, age, lesion type, and disease duration in patients with OLP. **Result** The prevalence of HT in patients with OLP was 31.20%, significantly higher than that in the control group (9.60%) (χ^2=18.504, P<0.001). The prevalence of HT in female patients with OLP (39.13%) was significantly higher than that in male patients (9.09%) (χ^2=10.93, P<0.001). The positivity rate of thyroid peroxidase antibodies (TPOAb) in patients with OLP (17.6%) was significantly higher than in the control group (4.0%) (χ^2=10.989, P<0.001). The TPOAb positivity rate was significantly higher in female patients (22.83%) than in male patients (3.03%) (χ^2=5.210, P=0.014). There was no statistically significant difference in the positivity rate of TgAb between patients with OLP (7.2%) and the control group (3.2%) (P>0.05). Patients with erosive lesions had a significantly higher TPOAb positivity rate (25.0%, 17/68) compared to those with non-erosive lesions (8.77%, 5/57), and the difference was statistically significant (χ^2=4.831, P=0.028). Logistic regression analysis revealed that female patients with OLP had an 8.935-fold higher risk of being TPOAb positive compared to males (*OR*=8.935, 95%*CI*: 1.134 - 70.388, P=0.038). Patients with erosive OLP lesions had a 3.199-fold higher risk of TPOAb positivity compared to those with non-erosive lesions (*OR*=3.199, 95%*CI*: 1.064 - 9.618, P=0.038). **Conclusion** The prevalence of HT is higher in patients with OLP, with higher positivity rates of anti-thyroid antibodies observed in female patients and those with erosive OLP lesions. This suggests that thyroid disease screening should be incorporated into the clinical management of patients with OLP, especially for women and patients who present with erosive lesions.

【**Key words**】 oral lichen planus; Hashimoto's thyroiditis; autoimmune diseases; anti-thyroid antibodies; thyroid peroxidase antibodies; thyroglobulin antibodies; antibody titers; erosive lesions; immune mechanisms
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口腔扁平苔藓（oral lichen planus，OLP）是一种影响口腔黏膜的T细胞介导的慢性炎症性疾病[1]，全球患病率为0.5% ~2%，多发于中老年女性[2]。它被定义为口腔黏膜潜在恶性疾病[3]，其恶性转化率为1.09% ~1.14%[4-5]。OLP的临床特点是多灶性，通常双侧受累，好发于颊黏膜、舌、唇、牙龈等部位。其基本病损特征是白色条纹，伴或不伴糜烂和溃疡。尽管OLP的病因和发病机制仍不明确[6]，但与心理因素、免疫功能和感染诱因等多种因素相关[7-9]。桥本甲状腺炎（Hashimoto's thyroiditis，HT）被认为是最常见的T细胞相关的自身免疫性甲状腺疾病，其特征是甲状腺功能减退和抗甲状腺抗体的产生。HT的全球患病率约为2%，且发病率持续上升，女性更容易患HT[10]。HT的发病机制同样复杂，涉及遗传易感性、环境因素和免疫调节失衡[11]。

近年来，研究提示OLP与HT之间可能存在关联[12-14]，且可能存在共同的免疫学基础[11, 13]。抗甲状腺过氧化物酶抗体（thyroid peroxidase antibodies，TPOAb）和抗甲状腺球蛋白抗体（thyroglobulin antibodies，TgAb）是HT中最常见的两种自身抗体[15]，其在甲状腺细胞的自身免疫攻击中起到关键作用[16]。然而，目前关于OLP与HT关联性的研究仍相对有限[10, 13, 17]，且研究结果并不一致[18-19]。有研究指出，OLP患者中HT的患病率较高[20-21]，而有研究则未能发现两者之间的显著关联[22]。此外，关于OLP患者的临床特征与抗甲状腺抗体水平之间关系的报道也较少[23]。本研究旨在通过病例对照研究方法，探讨新疆地区人群中OLP与HT及其抗甲状腺抗体之间的关联性，并分析OLP患者的性别、年龄、病损类型及病程长短与抗甲状腺抗体之间的关系，为OLP患者的甲状腺疾病筛查

提供临床依据。

1　资料和方法

1.1　研究对象

本研究通过新疆医科大学第一附属医院医学伦理委员会批准（审批号：K202304-11），所有患者均签署知情同意书。

1.1.1　病例组　选取2022年6月至2023年12月就诊于新疆医科大学第一附属医院（附属口腔医院）黏膜科的125例OLP患者作为病例组。

纳入标准：①根据《口腔扁平苔藓诊疗指南（试行）》[24]的诊断标准，通过病史、临床表现和组织病理学活检报告确诊为OLP。②病变部位包括颊黏膜、舌体、硬腭、软腭和牙龈，且病变在两侧对称；病损特征以小丘疹组成的形态各异的白色或灰白色条纹。③病理活检主要表现：上皮过角化，棘层增生或萎缩；上皮钉突不规则增生，形成锯齿状钉突；鳞状上皮深层可见淋巴细胞浸润；基底细胞液化变性；固有层浅层可见淋巴细胞为主的带状或灶性浸润且界限清晰。

排除标准：①诊断为其他口腔黏膜疾病。②确诊OLP之前患有甲状腺疾病者；既往进行过甲状腺手术和（或）碘治疗的患者。③有严重的系统性疾病、肿瘤或其他严重影响生活质量的自身免疫性疾病，如银屑病、白塞病和大疱性疾病。④在过去3个月内接受过免疫制剂治疗。⑤使用可能引起口腔扁平苔藓样病变的特定药物或银汞合金填充物。⑥孕妇或哺乳期妇女。

1.1.2　对照组　选取本院体检中心与OLP患者性别和年龄相匹配、且经口腔检查确认无口腔黏膜疾病的125例受试者作为对照组。

1.2　OLP临床表现评估

依据口腔扁平苔藓诊疗指南（修订版）[24]，目前临床中常根据病损是否有糜烂面，分为非糜烂型和糜烂型两种病损类型。①非糜烂型：白色线纹间及病损周围黏膜正常，可有充血，但无糜烂。患者多无症状，或偶有刺激痛。黏膜上白色、灰白色线状花纹组成网状、环状、斑块、水疱多种病损。②糜烂型：除白色病损外，线纹间及病损周围黏膜发生充血、糜烂、遗疡。患者有刺激痛，自发痛。

1.3　HT诊断标准

①典型的临床表现：常有颈部压迫感、咽部不适，偶有局部的疼痛与触痛，可伴有甲状腺功能减退；甲状腺触诊质地坚韧或“橡皮样”，呈弥漫性肿大，表面呈结节状等。

②实验室检查：采用化学发光免疫分析法检测。采集空腹静脉血5 mL，室温静置30 min后离心（3 000 rpm，10 min），分离血清并分装至EP管，-80 ℃保存待测。检测前样本室温复融，避免反复冻融。采用Elecsys Anti-TPO试剂盒（05200067，Roche，瑞士）检测TPOAb，阳性临界值≥34 IU/mL。采用Elecsys Anti-Tg试剂盒（05192760，Roche，瑞士）检测TgAb，阳性临界值≥115 IU/mL。血清抗甲状腺抗原抗体TgAb或TPOAb阳性，则可以诊断HT[25]。

③临床表现不典型：对于临床表现不典型者，则需高滴度的抗甲状腺抗体检测结果才能诊断，同时甲状腺彩超显示有弥漫性病变。每位患者均由两名独立的经验丰富的新疆医科大学第一附属医院内分泌科医生协助确诊桥本甲状腺炎。

1.4　分析指标

收集OLP组与对照组的性别、年龄、病损类型及病程等基本信息，并进行抗甲状腺过氧化物酶抗体TPOAb和TgAb的血清学检测，计算OLP组与对照组的HT患病率及抗甲状腺抗体阳性率，比较不同性别、年龄、病损类型及病程的OLP患者抗甲状腺抗体水平。依据联合国世界卫生组织的年龄分段标准，将OLP患者分为青年组（20~ 44岁）、中年组（45~59岁）和老年组（60岁以上）。

1.5　统计学分析

采用SPSS21.0软件进行统计学分析，计量资料符合正态分布，描述时用均数±标准差表示，采用独立t检验比较；计量资料不符合正态分布采用秩和检验。计数资料用n（%）表示，组间比较采用卡方检验。采用Logistic回归分析疾病发生的危险因素 。P< 0.05为差异有统计学意义。

2　结　果

2.1　一般情况

125例OLP组的年龄为（46.22±11.53）岁，125例对照组的年龄为（47.52±12.15）岁，差异无统计学意义（t=0.870，P=0.385）。在性别分布上，OLP组有33例男性和92例女性；对照组有31例男性和94例女性，差异无统计学意义（χ^2=0.084，P=0.772）。两组研究基线一致（表1）。

2.2　OLP组与对照组的HT患病率及抗甲状腺抗体阳性率的比较

OLP组HT患病率为31.2%（39/125），对照组为

表1　OLP病例组与对照组性别和年龄比较

Table 1　Comparison of gender and age between patients with OLP and the control group

Items	OLP	Control	t/χ^2	P
Age($\bar{x}\pm s$)/year	46.22±11.53	47.52±12.15	0.870	0.385
Genders				
Male(n)	33	31	0.084	0.772
Female(n)	92	94		

OLP: oral lichen planus

9.6%(12/125),OLP组HT患病率高于对照组,差异有统计学意义(χ^2=18.504,P<0.001)。

OLP组中TgAb的阳性率与对照组相比,差异无统计学意义(P>0.05)。OLP组的TPOAb阳性率高于对照组,差异有统计学意义(P<0.001)。OLP组TgAb+TPOAb双阳性率与对照组相比,差异无统计学意义(P>0.05)(表2)。

表2　OLP病例组与对照组抗甲状腺抗体阳性率的比较

Table 2　Comparison of thyroid antibody positivity rates between patients with OLP and the control group　n(%),n=125

Group	With HT	TgAb positive	TPOAb positive	TgAb+TPOAb double-positive
OLP	39(31.2)	9(7.2)	22(17.6)	8(6.4)
Control	12(9.6)	4(3.2)	5(4)	3(2.4)
χ^2	18.504	2.029	10.989	2.377
P	<0.001	0.154	<0.001	0.123

HT: Hashimoto's thyroiditis; OLP: oral lichen planus; TgAb: hyroglobulin antibodies; TPOAb: thyroid peroxidase antibodies

2.3　不同性别、年龄、病损类型及病程的OLP患者抗甲状腺抗体水平比较

在OLP组中,女性HT患病率为39.13%(36/92),显著高于男性患病率9.09%(3/33)(χ^2=10.93,P<0.001)。其中女性OLP患者TPOAb阳性率显著高于男性患者,差异有统计学意义(P<0.05),而TgAb阳性率及TgAb+TPOAb双阳性率在性别上差异无统计学意义(P>0.05)。糜烂型OLP患者的TPOAb阳性率高于非糜烂型OLP患者,差异有统计学意义(P<0.05),表明糜烂型OLP患者的甲状腺自身免疫反应更为活跃。不同年龄的OLP患者TgAb阳性率、TPOAb阳性率及TgAb+TPOAb双阳性率差异均无统计学意义(P>0.05)。病程超过6个月的OLP患者TgAb阳性率、TPOAb阳性率及TgAb+TPOAb双阳性率与病程小于6个月的OLP患者相比差异无统计学意义(P>0.05)(表3)。

2.4　OLP患者TPOAb阳性率与年龄、性别、病损分型及病程的关联性

通过Logistic回归分析发现,女性OLP患者TPOAb阳性的风险是男性的8.935倍(OR=8.935,95%CI:1.134-70.388,P=0.038);糜烂型病损OLP患者的TPOAb阳性风险是非糜烂型的3.199倍(OR=3.199,95%CI:1.064-9.618,P=0.038);青年组OLP患者较中年组和老年组的患者,结局风险未显著升高(OR=1.025,95%CI=0.958-1.053,P=0.966;OR=0.983,95%CI=0.956-1.051,P=0.865);病程超过6个月的OLP患者较小于6个月的患者,结局风险未显著升高(OR=1.079,95%CI:0.389-2.990,P=0.884)(表4)。

2.5　OLP患者不同性别、病损分型及病程组间TPOAb滴度的比较

女性及糜烂型OLP比男性及非糜烂型OLP的TPOAb水平高,差异有统计学意义(Z=-3.832,P<0.01;Z=-6.144,P< 0.01)。病程长短对TPOAb水平的影响无统计学差异(Z=-1.154,P>0.05)(图1)。

3　讨　论

本研究发现,在OLP病例组中,HT的患病率达到了31.2%,明显高于对照组9.6%患病率;而且女性OLP患者中HT的患病率(39.13%)显著高于男性患者(9.09%),这一发现与以往研究结果一致[10, 26-27],即女性更易受到自身免疫性疾病的影响。性别差异可能与多种因素有关,包括性激素水平的差异、X染色体的遗传易感性、以及女性与男性在免疫反应上的本质区别[28]。性激素,尤其是雌激素,可调节多种免疫细胞的活性,T细胞是其作用的主要靶细胞[29-30],雌激素水平的改变使得T细胞调节功能出现紊乱。雌激素水平的改变作为一个始发因素和促进因素,导致Thl /Th2(helper T cells, Th)细胞平衡状态改变并向Th1偏移,介导以Th1型为主的细胞免疫[31],由此影响免疫细胞的活性和自身抗体的产生[32],女性更容易发展为

表3　不同年龄、性别、病损类型及病程的OLP患者抗甲状腺抗体水平比较

Table 3　Comparison of anti-thyroid antibody levels in patients with OLP based on age, gender, lesion types, and disease duration n(%)

Type	n	TgAb positive	TPOAb positive	TgAb+TPOAb Double-positive
Age				
Youth	52	3(5.77)	8(15.38)	3(5.77)
Middle-aged	56	4(7.14)	11(19.64)	2(3.57)
Elderly	17	2(11.76)	3(17.65)	3(17.65)
χ^2		0.785	0.473	5.072
P		0.675	0.789	0.079
Genders				
Male	33	1(3.03)	1(3.03)	1(3.03)
Female	92	8(8.69)	21(22.83)	7(7.61)
χ^2		1.113	5.210	0.828
P		0.292	0.014	0.443
Lesion Type				
Erosive	68	5(7.35)	17(25)	4(5.88)
Non-erosive	57	4(7.02)	5(8.77)	4(7.02)
χ^2		0.002	4.831	0.061
P		0.967	0.028	0.806
Disease Duration				
<6 months	53	3(5.66)	8(15.09)	3(5.66)
≥6 months	72	6(8.33)	14(19.44)	5(6..94)
χ^2		0.271	0.192	0.084
P		0.603	0.662	0.772

Youth group: 20-44 years old; middle-aged group:45-59 years old; elderly group: over 60 years old. OLP: oral lichen planus; TgAb: thyroglobulin antibodies; TPOAb: thyroid peroxidase antibodies

表4　OLP患者TPOAb阳性率与年龄、性别、病损分型及病程的关联性

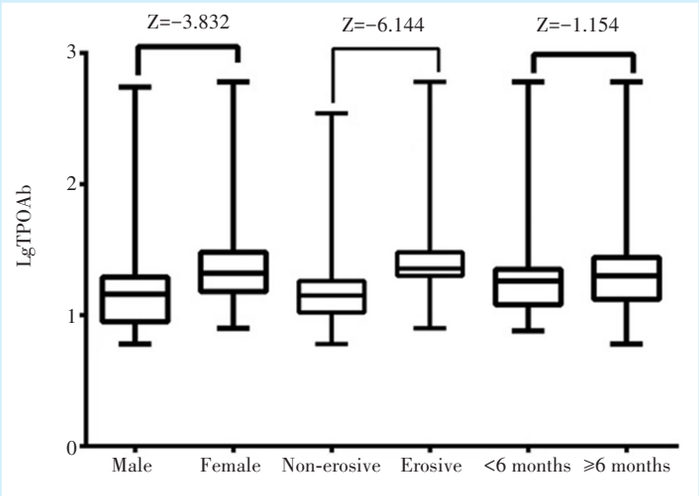
Table 4　Correlation between the positive rate of TPOAb in OLP patients and age, gender, lesion classification and disease course

Risk factors	*B*	*SE*	*Wald*	*OR*	95%*CI*	*P*
Age						
Middle-aged(*vs* Youth)	0.003	0.034	0.031	1.025	0.958-1.053	0.966
Elderly(*vs* Youth)	0.005	0.014	0.027	0.983	0.956-1.051	0.865
Genders						
Female(*vs* Male)	2.190	1.053	4.325	8.935	1.134-70.388	0.038
Lesion type						
Erosive(*vs* Non-erosive)	1.163	0.562	4.286	3.199	1.064-9.618	0.038
Disease duration						
≥6 months(*vs* <6 months)	0.076	0.520	0.021	1.079	0.389-2.990	0.884

Youth group: 20-44 years old; middle-aged group:45-59 years old; elderly group: over 60 years old. OLP: oral lichen planus; TPOAb: thyroid peroxidase antibodies

HT和OLP等自身免疫性疾病。

TPOAb是甲状腺组织中一种常见的抗体，属于IgG类免疫球蛋白，主要和甲状腺组织的免疫损伤有关，可参与HT和萎缩性甲状腺炎的组织破坏过程，病理机制主要是通过激活补体、抗体依赖细胞介导的细胞毒作用和致敏的T杀伤细胞直接杀伤甲状腺滤泡细胞[10, 33]。本研究中，OLP病例组血清中TPOAb阳性率明显高于对照组。TgAb和TPOAb作为针对甲状腺组织的自身抗体，在HT患者中已被证实可介导甲状腺滤泡细胞的破坏。由于本研究发现OLP患者中抗甲状腺抗体的阳性率显著升高，提示其免疫异常状态可能与甲状腺自



OLP: oral lichen planus; TPOAb: thyroid peroxidase antibodies

Figure 1　Comparison of TPOAb antibody titers between genders, lesion types, and disease duration categories in patients with OLP

图1　OLP患者不同性别、病损分型及病程组间TPOAb抗体滴度的比较

身免疫反应有关。因此，推测这些抗体也可能通过某种机制参与OLP患者的口腔黏膜病变过程[34]，但具体作用机制尚需进一步研究验证。本研究显示，在女性OLP患者中，TPOAb抗甲状腺抗体的阳性率显著高于男性，糜烂型OLP患者的TPOAb阳性率高于非糜烂型。这一结果表明，OLP的临床表现形式可能与甲状腺自身免疫反应的活跃程度有关。糜烂型OLP病损反映了更强烈的局部炎症反应或者更复杂的免疫调节异常[35]，可能增加对甲状腺细胞的自身免疫攻击，从而导致TPOAb阳性率的增加。

Logistic回归分析结果显示，TPOAb抗体水平（阳性率及抗体滴度）与女性患者和糜烂型OLP患病风险增高显著相关。这与Liu等[14]、Alikhani等[33]的研究结果相似。然而，也有研究发现OLP患者中抗甲状腺抗体水平无显著变化[10, 36]。这种差异可能与研究设计、样本大小、疾病评估方法和患者人群的异质性有关[37]，还可能与系统性和局部因素有关[14, 38]。在HT中，TPOAb可能通过分子模拟或组织损伤释放抗原，触发针对口腔黏膜的交叉免疫反应[36]。其可能机制包括以下3个方面[11, 20, 39]：①部分HT病例可能与OLP共存或伴随发生，HT引起的激素水平改变及甲状腺自身抗体的产生，可能导致口腔局部角质形成细胞的改变，从而引发OLP[40]；②OLP患者外周血及局部病损组织中均存在T细胞分布异常及促炎因子水平升高，这些变化与HT患者中的免疫异常相似，提示OLP可能通过局部或系统性免疫激活影响甲状腺免疫环境，两者可能共享免疫通路；③在遗传因素方面，关于OLP和HT易感基因的相关研究，例如HLA-DR、CTLA-4、PTPN22、FOXP3等[40]，它们在调节T细胞功能和维持免疫耐受方面发挥重要作用。这些基因的多态性可能增加个体对自身免疫性疾病的易感性。然而，目前尚无关于OLP与HT共存基因的系统性研究，未来有必要开展基因组关联分析，以明确两者是否存在遗传上的重叠机制[36]。由于HT与OLP的发病机制相似，均为T细胞介导的局部免疫反应[11]，因此两者之间的关系需要更多关注，细胞免疫可能是更好的研究方向。

综上，新疆地区人群中OLP与HT存在一定关联性，OLP患者中HT的患病率高，尤其在女性及糜烂型OLP患者中抗甲状腺抗体的阳性率较高。这一结果提示，在临床实践中应对OLP患者，尤其是高风险人群进行甲状腺功能和抗体筛查。由于本研究为病例对照设计，尚无法明确OLP与HT之间的因果关系。未来需开展前瞻性队列研究，进一步验证两者关联，并深入探讨其共同的免疫机制。此外，由于本研究样本量相对较小，研究对象地域集中等，可能存在选择偏差和结果普遍适用性限制。未来的研究应采用大样本、多中心的前瞻性设计来进一步验证本研究的发现。

【Author contributions】　Liu Y designed the study, performed the ex-

periments, analyzed the data and wrote the article. Chen Y, Cong ZX, Li YM analyzed the data, designed the research study and revised the article. Xue R, Zhao J conceptualized and reviewed the article. All authors read and approved the final manuscript as submitted.

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