

World Journal of *Clinical Cases*

World J Clin Cases 2020 September 26; 8(18): 3920-4279



OPINION REVIEW

- 3920** Special features of SARS-CoV2 in daily practice
Charitos IA, Ballini A, Bottalico L, Cantore S, Passarelli PC, Inchingolo F, D'Addona A, Santacroce L

EVIDENCE REVIEW

- 3934** Gastrointestinal insights during the COVID-19 epidemic
Nie K, Yang YY, Deng MZ, Wang XY

REVIEW

- 3942** From infections to autoimmunity: Diagnostic challenges in common variable immunodeficiency
Więsik-Szewczyk E, Jahnz-Różyk K
- 3956** One disease, many faces-typical and atypical presentations of SARS-CoV-2 infection-related COVID-19 disease
Philips CA, Mohan N, Ahamed R, Kumbar S, Rajesh S, George T, Mohanan M, Augustine P

MINIREVIEWS

- 3971** Application of artificial neural networks in detection and diagnosis of gastrointestinal and liver tumors
Mao WB, Lyu JY, Vaishnani DK, Lyu YM, Gong W, Xue XL, Shentu YP, Ma J
- 3978** Hepatic epithelioid hemangioendothelioma: Update on diagnosis and therapy
Kou K, Chen YG, Zhou JP, Sun XD, Sun DW, Li SX, Lv GY

ORIGINAL ARTICLE

Clinical and Translational Research

- 3988** *Streptococcus agalactiae*: Identification methods, antimicrobial susceptibility, and resistance genes in pregnant women
Santana FAF, de Oliveira TVL, Filho MBDS, da Silva LSC, de Brito BB, de Melo FF, Souza CL, Marques LM, Oliveira MV
- 3999** Twelve-month evaluation of the atraumatic restorative treatment approach for class III restorations: An interventional study
Shivanna MM, Ganesh S, Khanagar SB, Naik S, Divakar DD, Al-Kheraif AA, Jhugroo C

Case Control Study

- 4010** Effects of different doses of metformin on bone mineral density and bone metabolism in elderly male patients with type 2 diabetes mellitus
Wang LX, Wang GY, Su N, Ma J, Li YK

- 4017** Relationship between granulomatous lobular mastitis and methylene tetrahydrofolate reductase gene polymorphism

Lei QR, Yang X, Miao CM, Wang JC, Yang Y

Retrospective Cohort Study

- 4022** First-line chemotherapy in very elderly patients with metastatic pancreatic cancer: Gemcitabine monotherapy vs combination chemotherapy

Han SY, Kim DU, Seol YM, Kim S, Lee NK, Hong SB, Seo HI

Retrospective Study

- 4034** Pre- and intraoperative predictors of acute kidney injury after liver transplantation

Mrzljak A, Franusic L, Pavicic-Saric J, Kelava T, Jurekovic Z, Kocman B, Mikulic D, Budimir-Bekan I, Knotek M

- 4043** Clinical value of needleless sling in treatment of female stress urinary incontinence

Chen YG, Zhang YG, Zhang W, Li X, Wang X

- 4051** Intratympanic dexamethasone injection for sudden sensorineural hearing loss in pregnancy

Lyu YL, Zeng FQ, Zhou Z, Yan M, Zhang W, Liu M, Ke ZY

- 4059** Research on the effect of health care integration on patients' negative emotions and satisfaction with lung cancer nursing activities

Long FJ, Chen H, Wang YF, He LM, Chen L, Liang ZB, Chen YN, Gong XH

- 4067** Comparison between computed tomography and magnetic resonance imaging in clinical diagnosis and treatment of tibial platform fractures

Liu XD, Wang HB, Zhang TC, Wan Y, Zhang CZ

SYSTEMATIC REVIEWS

- 4075** Primary sclerosing cholangitis and autoimmune hepatitis overlap syndrome associated with inflammatory bowel disease: A case report and systematic review

Ballotin VR, Bigarella LG, Riva F, Onzi G, Balbinot RA, Balbinot SS, Soldera J

CASE REPORT

- 4094** Epidermolytic acanthoma: A case report

Ginsberg AS, Rajagopalan A, Terlizzi JP

- 4100** Management of pembrolizumab-induced steroid refractory mucositis with infliximab: A case report

Dang H, Sun J, Wang G, Renner G, Layfield L, Hilli J

- 4109** Small bowel obstruction caused by a bezoar following an adult simultaneous liver-kidney transplantation: A case report

Pan G, Kim RD, Campsen J, Rofaiel G

- 4114** Laparoscopic resection of primary retroperitoneal schwannoma: A case report

Ribeiro Jr MAF, Elias YGB, Augusto SDS, Nêder PR, Costa CT, Mauricio AD, Sampaio AP, Fonseca AZ

- 4122** Sweet syndrome as a paraneoplastic manifestation of cholangiocarcinoma: A case report
Lemaire CC, Portilho ALC, Pinheiro LV, Vivas RA, Britto M, Montenegro M, Rodrigues LFDF, Arruda S, Lyra AC, Cavalcante LN
- 4128** Multidisciplinary approach to suspected sudden unexpected infant death caused by milk-aspiration: A case report
Maiese A, La Russa R, Arcangeli M, Volonnino G, De Matteis A, Frati P, Fineschi V
- 4135** Stress fractures in uncommon location: Six case reports and review of the literature
Ficek K, Cyganik P, Rajca J, Racut A, Kiełtyka A, Grzywocz J, Hajduk G
- 4151** Celiac disease and Sjögren's syndrome: A case report and review of literature
Balaban DV, Mihai A, Dima A, Popp A, Jinga M, Jurcut C
- 4162** Nonasthmatic eosinophilic bronchitis in an ulcerative colitis patient – a putative adverse reaction to mesalazine: A case report and review of literature
Cernomaz AT, Bordeianu G, Terinte C, Gavrilescu CM
- 4169** Insulinoma presenting with postprandial hypoglycemia and a low body mass index: A case report
Přidavková D, Samoš M, Kyčina R, Adamicová K, Kalman M, Belicová M, Mokáň M
- 4177** Neoadjuvant chemoradiotherapy for locally advanced gastric cancer with bulky lymph node metastasis: Five case reports
Nomura E, Kayano H, Machida T, Izumi H, Yamamoto S, Sugawara A, Mukai M, Hasebe T
- 4186** Unilateral pleuroparenchymal fibroelastosis as a rare form of idiopathic interstitial pneumonia: A case report
Lee JH, Jang HJ, Park JH, Kim HK, Lee S, Kim JY, Kim SH
- 4193** Superior mesenteric vein thrombosis induced by influenza infection: A case report
Oh GM, Jung K, Kim JH, Kim SE, Moon W, Park MI, Park SJ
- 4200** Mucinous adenocarcinoma of the buttock associated with hidradenitis: A case report
Kim SJ, Kim TG, Gu MJ, Kim S
- 4207** TFE3-expressing malignant perivascular epithelioid cell tumor of the mesentery: A case report and review of literature
Kim NI, Lee JS, Choi YD, Ju UC, Nam JH
- 4215** Robotic surgery in giant multilocular cystadenoma of the prostate: A rare case report
Fan LW, Chang YH, Shao IH, Wu KF, Pang ST
- 4223** Multiple recurrent neurofibromas in the abdominal wall: A case report
Zhao XF, Shen YM, Chen J
- 4228** Mine disaster survivor's pelvic floor hernia treated with laparoscopic surgery and a perineal approach: A case report
Chen K, Lan YZ, Li J, Xiang YY, Zeng DZ

- 4234** Successful treatment of encrusted cystitis: A case report and review of literature
Fu JG, Xie KJ
- 4245** Massive pulmonary haemorrhage due to severe trauma treated with repeated alveolar lavage combined with extracorporeal membrane oxygenation: A case report
Zhang BY, Chen XC, You Y, Chen M, Yu WK
- 4252** Gitelman syndrome caused by a rare homozygous mutation in the *SLC12A3* gene: A case report
Yu RZ, Chen MS
- 4259** Arterial embolism caused by a peripherally inserted central catheter in a very premature infant: A case report and literature review
Huang YF, Hu YL, Wan XL, Cheng H, Wu YH, Yang XY, Shi J
- 4266** Left bundle branch pacing with optimization of cardiac resynchronization treatment: A case report
Zhang DH, Lang MJ, Tang G, Chen XX, Li HF
- 4272** Lymphoplasmacyte-rich meningioma with atypical cystic-solid feature: A case report
Gu KC, Wan Y, Xiang L, Wang LS, Yao WJ

ABOUT COVER

Editorial board member of *World Journal of Clinical Cases*, Dr. Li is a Professor at the Nanjing University Medical School in Nanjing, China. Having received his Bachelor's degree from Xuzhou Medical College in 1997, Dr. Li undertook his postgraduate training first at Nanjing Medical University, receiving his Master's degree in 2004, and then at Fudan University, receiving his PhD in 2007. He advanced to Chief Physician in the Department of Anesthesiology at The Affiliated Hospital of Nanjing University Medical School in 2017 and has held the position since. His ongoing research interests involve ultrasound (transthoracic echo and transesophageal echo) in clinical anesthesia and ultrasound-guided limb and trunk nerve block in postoperative pain management. (L-Editor: Filipodia)

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The *WJCC* is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, PubMed, and PubMed Central. The 2020 Edition of Journal Citation Reports® cites the 2019 impact factor (IF) for *WJCC* as 1.013; IF without journal self cites: 0.991; Ranking: 120 among 165 journals in medicine, general and internal; and Quartile category: Q3.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Ji-Hong Liu; Production Department Director: Xiang Li; Editorial Office Director: Jin-Lai Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Semimonthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Sandro Vento, Bao-Gan Peng

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

September 26, 2020

COPYRIGHT

© 2020 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Case Control Study

Relationship between granulomatous lobular mastitis and methylene tetrahydrofolate reductase gene polymorphism

Qing-Ran Lei, Xin Yang, Chun-Mei Miao, Jin-Chang Wang, Yue Yang

ORCID number: Qing-Ran Lei 0000-0003-4537-3612; Xin Yang 0000-0002-0623-1243; Chun-Mei Miao 0000-0003-3937-7860; Jin-Chang Wang 0000-0002-5084-9016; Yue Yang 0000-0001-6447-6268.

Author contributions: Lei QR, Yang X, Miao CM, Wang JC and Yang Y wrote, edited and proofread the manuscript.

Supported by the Xishan District Science and Technology Plan Project of Kunming.

Institutional review board statement: The study was approved by Ethics Committee of The First Hospital of Kunming.

Informed consent statement: All patients gave informed consent.

Conflict-of-interest statement: The authors declare that there is no conflict of interest.

Data sharing statement: No additional data available.

STROBE statement: The manuscript has been prepared and revised according to the STROBE statement.

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external

Qing-Ran Lei, Xin Yang, Chun-Mei Miao, Jin-Chang Wang, Yue Yang, Department of Breast, The First People's Hospital of Kunming, Kunming 650031, Yunnan Province, China

Corresponding author: Yue Yang, PhD, Chief Physician, Department of Breast, The First People's Hospital of Kunming, No. 504 Qingnian Road, Kunming 650031, Yunnan Province, China. yangyue_2018@sina.com

Abstract

BACKGROUND

Variations in the methylene tetrahydrofolate reductase (*MTHFR*) gene have been reported as risk factors for numerous conditions, including cardiovascular disease, thrombophilia, stroke, hypertension and pregnancy-related complications. Moreover, it was reported there is an association between breast cancer and mutations in *MTHFR*-C677T. However, whether there is an association between *MTHFR* gene polymorphism and granulomatous lobular mastitis or not has been rarely investigated.

AIM

To analyze the association between *MTHFR* gene polymorphism and granulomatous lobular mastitis.

METHODS

Fifty-one patients with granulomatous lobular mastitis admitted to The First Hospital of Kunming were selected as study samples. Their hospitalization time ranged from February 2018 to February 2019. The 51 patients were included in the experimental group, and another 51 women who underwent physical examination at The First Hospital of Kunming in the same period were included in the control group. Deoxyribonucleic acid and *MTHFR* genetic polymorphism testing were performed in each group. The association between *MTHFR* gene polymorphism and granulomatous lobular mastitis was observed.

RESULTS

There were significant differences in genotype frequency and allele frequency of C/C and C/T between the experimental group and the control group (all $P < 0.05$). However, there was no significant difference in frequency of T/T genotype between the two groups ($P > 0.05$). In addition, there was no significant difference in genotype frequency and allele frequency of A/A, A/C and C/C between the two groups ($P > 0.05$).

reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Received: June 16, 2020

Peer-review started: June 16, 2020

First decision: July 25, 2020

Revised: August 5, 2020

Accepted: August 15, 2020

Article in press: August 15, 2020

Published online: September 26, 2020

P-Reviewer: Jones G, Mangiola F, Sun K

S-Editor: Zhang L

L-Editor: Filipodia

P-Editor: Liu JH



CONCLUSION

MTHFR gene C677T locus polymorphism is closely related to granulomatous lobular mastitis.

Key Words: Methylene tetrahydrofolate reductase; Gene polymorphism; Granulomatous lobular mastitis; Association; C677T; Factor

©The Author(s) 2020. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: Methylene tetrahydrofolate reductase (*MTHFR*) gene polymorphism is associated with several diseases. It was reported that mutations in *MTHFR*-C677T is associated with breast cancer. We tested the association between *MTHFR* gene polymorphism and granulomatous lobular mastitis in patients with this disease. The results supported our hypothesis that *MTHFR* C677T is a susceptibility factor that may influence the occurrence of granulomatous lobular mastitis.

Citation: Lei QR, Yang X, Miao CM, Wang JC, Yang Y. Relationship between granulomatous lobular mastitis and methylene tetrahydrofolate reductase gene polymorphism. *World J Clin Cases* 2020; 8(18): 4017-4021

URL: <https://www.wjgnet.com/2307-8960/full/v8/i18/4017.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v8.i18.4017>

INTRODUCTION

Granulomatous lobular mastitis is a chronic inflammatory response caused by granulomatous changes around lobules and ducts of the breast. It often occurs in young women, and the disease course is long. If patients are not treated effectively, they are likely to relapse. In addition, the rate of misdiagnosis is high because the clinical manifestations are similar to those of plasma cell mastitis. The diagnosis error leads to delayed treatment and tremendous physical and emotional damage in patients^[1]. Although some research reported that granulomatous lobular mastitis is associated with methylene tetrahydrofolate reductase (*MTHFR*) gene, the research is limited and the relationship is not clear^[2]. Thus, we examined *MTHFR* gene polymorphism in 51 patients with granulomatous lobular mastitis.

MATERIALS AND METHODS

Materials at baseline

Fifty-one patients with granulomatous lobular mastitis who were admitted to The First Hospital of Kunming from February 2018 to February 2019 were included in the experimental group. Another 51 women who underwent physical examination in our hospital in the same period were included in the control group. The average age of the experimental group and the control group was 32.19 ± 3.28 years and 32.26 ± 3.30 years, respectively. Data at baseline were analyzed by statistical software. A *P* value < 0.05 was considered statistically significant.

Methods

Two milliliters of blood specimen was collected from the patients' upper arm. Deoxyribonucleic acid (DNA) was extracted and following DNA extraction, samples were tested for *MTHFR* A1298C and C677T gene polymorphisms. Then, 200 μ L of blood specimen was drawn, and 200 μ L of GB buffer and 20 μ L of Proteinase K mix were added. The sample was left at room temperature 2-5 min, and then 350 μ L of BD buffer was added. After centrifugation at 12000 rpm for 30 min, 500 μ L of PWB buffer was added to the CG2 adsorption column. Then, 600 μ L of PWB rinsing liquids were added, and an equivalent amount of rinsing was added repeatedly followed by centrifugation for 2 min. The waste was discarded. The CG2 adsorption column was left for 2 min at room temperature. The remaining rinses were dried in adsorption columns that were then transferred to centrifuge tubes with 1.5 mL volume. Fifty

microliters of elution buffer TB was added and left for 2 min at room temperature. The sample was centrifuged at 12000 rpm for 2 min, and the solution was collected.

Kits manufactured by Kuangyuan Molecular (Suzhou, China) were used for *MTHFR* gene polymorphism detection. Fluorophore solution (5 µL) was placed into each reaction hole, and the samples, including positive samples 1-A, 1-B and 1-C, were added to each reaction hole. The above steps were repeated, and the samples, including positive samples 2-A, 2-B and 2-C, were added to each reaction hole. Then, 1 µL of purified water was dripped into the holes. The above reaction plates were centrifuged and brought to a standstill. Quantitative polymerase chain reaction device manufactured by Beijing Keyu Xingye Science and Technology Development Co. Ltd (Beijing, China) was set to the heating mode. The fluorophore was activated at 95°C for 10 min, and the samples were denatured at 95°C for 15 min. Complete integration of samples and fluorescence were acquired at 95°C for 40 min. The steps of denaturation and integration were repeated 40 times and then the samples were cooled down. VIC and FAM signals were acquired and recorded at 60°C. Reaction plates were embedded in the device. Scale reading was conducted, and data were acquired.

Measurements

The expression of C677T and A1298C *MTHFR* genes were observed at different loci. The transcript sequences for C677T and A1298C *MTHFR* genes were as follows: mutant type C/C and wild type C/C; mutant type C/C and heterozygous C/C; mutant type C/C and mutant type T/T; heterozygous A/C and wild type C/C; heterozygous A/C and heterozygous C/T; heterozygous A/C and mutant type T/T; wild type A/A and wild type C/C; wild type A/A and heterozygous C/T; wild type A/A and mutant type T/T^[3,4].

Data processing

The results in this study are presented using “%”. SPSS 20.0 statistical software (Armonk, NY, United States) was used, and chi-square test was performed to compare the differences between the two groups. $P < 0.05$ indicated that the differences between the two groups were significant.

RESULTS

Genotypic and allelic frequencies of *MTHFR* C677T

There were significant differences in C/C and C/T genotype frequency between the experimental group and the control group (all $P < 0.05$). However, the difference in T/T genotype frequency was not significant between the two groups ($P > 0.05$). There were significant differences in allele frequency between the two groups (all $P < 0.05$, Table 1).

Genotypic and allelic frequencies of *MTHFR* A1298C

The differences in A/A, A/C and C/C genotypic and allelic frequencies of *MTHFR* A1298C were not significant between the two groups ($P > 0.05$, Table 2).

DISCUSSION

Granulomatous lobular mastitis is very common in breast-feeding women. Mostly, it occurs in women within 6 years after giving birth^[4,5]. However, the disease pathogenesis on granulomatous lobular mastitis is unclear. According to some experts^[6-8], it is associated with *MTHFR* gene, to be specific, *MTHFR* C677T. Generally, autoimmune disease and malignant diseases have genetic susceptibility, which may be due to gene mutations. Accordingly, the present study discussed the relationship between granulomatous lobular mastitis and *MTHFR* gene polymorphism.

MTHFR gene polymorphism may cause decreased thermostability and bioactivity of an enzyme. C677T and A1298C are two important loci to test the relevant diseases in the clinical practice. C677T is associated with autosomal recessive inheritance. Similarly, A1298C mutation may also cause decreased thermostability and bioactivity of an enzyme. Comparatively, the effect of A1298C is less serious than that of A1298C^[9,10]. Reduced enzymatic activity of *MTHFR* results in high homocysteine level and abnormal folic acid levels, which in turn has an adverse effect on DNA formation and causes chromosome disorder^[11,12].

Table 1 Differences in methylene tetrahydrofolate reductase C677T between the two groups

Groups	n	Genotype frequency			Allele frequency, %	
		C/C	C/T	T/T	C	T
Experimental group	51	13	28	10	65.89	34.11
Control group	51	24	19	8	51.44	48.56
χ^2		10.064	6.269	0.529	4.305	4.305
P value		0.002	0.012	0.467	0.038	0.038

Table 2 Differences in methylene tetrahydrofolate reductase A1298C between the two groups

Groups	n	Genotype frequency			Allele frequency, %	
		A/A	A/C	C/C	A	C
Experimental group	51	37	13	1	85.30	14.70
Control group	51	35	14	2	82.35	17.65
χ^2		0.422	0.099	0.673	0.321	0.321
P value		0.516	0.753	0.412	0.571	0.571

In the current study, there were significant differences in C/C and C/T genotype frequency between the experimental group and the control group (all $P < 0.05$). However, the difference in T/T genotype frequency was not significant between the two groups ($P > 0.05$). In addition, the differences in A/A, A/C and C/C genotypic and allelic frequencies of *MTHFR* A1298C between the two groups were not significant ($P > 0.05$). Nevertheless, there were significant differences in allele frequency between the two groups (all $P < 0.05$). The results suggest that the *MTHFR* gene is a susceptible factor for granulomatous lobular mastitis, and it causes specificity of genetic loci. Of them, loci C677T may cause diseases but A1298C may not^[13].

CONCLUSION

In summary, *MTHFR* C677T is one of the factors that induce granulomatous lobular mastitis. The relationship between *MTHFR* polymorphism and granulomatous lobular mastitis need to be studied further in large studies.

ARTICLE HIGHLIGHTS

Research background

Granulomatous lobular mastitis is a chronic disease of the breast. Its clinical and radiological features are similar to breast cancer, which makes its diagnosis and treatment complicated. To date, there is no obviously effective treatment for it because its etiology and pathogenesis remain unclear. Several potential reasons include autoimmunity, hormonal disorders, gene polymorphisms, etc. For polymorphisms, the relationship between common variants of *MTHFR*, e.g., 677T and 1298C, and granulomatous lobular mastitis was not fully understood.

Research motivation

Identification of the pathogenic genes for granulomatous lobular mastitis will aid in the diagnosis of this disorder by using gene testing. In addition, it will help in the development of targeted therapy, which will allow for better clinical outcomes.

Research objectives

This study aimed to analyze the association between *MTHFR* gene polymorphism and granulomatous lobular mastitis.

Research methods

Participants were enrolled and divided into two groups, an experimental group and a control group. The experimental group included patients with granulomatous lobular mastitis. Participants in the control group were women who underwent physical examination. Blood specimen was collected for *MTHFR* A1298C and C677T gene polymorphisms. The expression of C677T and A1298C *MTHFR* genes were observed at different loci.

Research results

The results revealed that there were significant differences in C/C and C/T genotype frequency between the experimental group and the control group (all $P < 0.05$). In addition, there were significant differences in allele frequency between the two groups (all $P < 0.05$).

Research conclusions

MTHFR gene was a susceptible factor for granulomatous lobular mastitis, and it causes specificity of genetic loci.

Research perspectives

The relationship between common variants of *MTHFR* and the incidence of granulomatous lobular mastitis should be further identified in clinical practice with a large number of patients.

REFERENCES

- Özşen M, Tolunay Ş, Gökğöz MŞ. Granulomatous Lobular Mastitis: Clinicopathologic Presentation of 90 Cases. *Türk Patoloji Derg* 2018; **34**: 215-219 [PMID: 29744854 DOI: 10.5146/tjpath.2018.01431]
- Chen L, Zhang XY, Wang YW, Zhao QF, Ding HY. [Granulomatous lobular mastitis: a clinicopathological analysis of 300 cases]. *Zhonghua Bing Li Xue Za Zhi* 2019; **48**: 231-236 [PMID: 30831651 DOI: 10.3760/cma.j.issn.0529-5807.2019.03.012]
- Liu L, Zhou F, Zhang X, Liu S, Liu L, Xiang Y, Guo M, Yu L, Wang F, Ma Z, Li L, Gao D, Zhang Q, Fu Q, Yu Z. Granulomatous Lobular Mastitis: Antituberculous Treatment and Outcome in 22 Patients. *Breast Care (Basel)* 2018; **13**: 359-363 [PMID: 30498422 DOI: 10.1159/000487935]
- Feng WQ, Ma Y. Association between methylenetetrahydrofolate reductase and gynecological diseases. *Shiyong Yixue Zazhi* 2019; **35**: 1677-1680
- Wang Z, Wang N, Liu X, Wang Q, Xu B, Liu P, Zhu H, Chen J, Situ H, Lin Y. Broadleaf Mahonia attenuates granulomatous lobular mastitis-associated inflammation by inhibiting CCL5 expression in macrophages. *Int J Mol Med* 2018; **41**: 340-352 [PMID: 29138800 DOI: 10.3892/ijmm.2017.3246]
- Chow LW. Management of granulomatous mastitis. *Zhonghua Ruxianbing Zazhi (Electronic edition)* 2018; **12**: 198-201
- Aburema S, Smooker P, Malmo J, Deighton M. Molecular epidemiology of recurrent clinical mastitis due to *Streptococcus uberis*: evidence of both an environmental source and recurring infection with the same strain. *J Dairy Sci* 2014; **97**: 285-290 [PMID: 24239086 DOI: 10.3168/jds.2013.7074]
- Kamyab A. Granulomatous lobular mastitis secondary to *Mycobacterium fortuitum*. *World J Clin Cases* 2016; **4**: 409-412 [PMID: 28035314 DOI: 10.12998/wjcc.v4.i12.409]
- Shin YD, Park SS, Song YJ, Son SM, Choi YJ. Is surgical excision necessary for the treatment of Granulomatous lobular mastitis? *BMC Womens Health* 2017; **17**: 49 [PMID: 28738795 DOI: 10.1186/s12905-017-0412-0]
- Zhang XY, Zhang Y. MTHFR gene polymorphism. *Zhonghua Jianyan Yixue Zazhi* 2016; **39**: 544-547 [DOI: 10.3760/cma.j.issn.1009-9158.2016.07.018]
- Szweda P, Schielmann M, Frankowska A, Kot B, Zalewska M. Antibiotic resistance in *Staphylococcus aureus* strains isolated from cows with mastitis in eastern Poland and analysis of susceptibility of resistant strains to alternative nonantibiotic agents: lysostaphin, nisin and polymyxin B. *J Vet Med Sci* 2014; **76**: 355-362 [PMID: 24212507 DOI: 10.1292/jvms.13-0177]
- Chougule A, Bal A, Das A, Singh G. IgG4 related sclerosing mastitis: expanding the morphological spectrum of IgG4 related diseases. *Pathology* 2015; **47**: 27-33 [PMID: 25474510 DOI: 10.1097/PAT.0000000000000187]
- Zhang J, Cong HL, Cao L, Chen MY, Mao YM. Association between methylenetetrahydrofolate reductase gene A1298C polymorphism and hyperhomocysteinemia. *Zhonghua Laonian Xinnao Xueguanbing Zazhi* 2017; **19**: 1166-1169 [DOI: 10.3969/j.issn.1009-0126.2017.11.012]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

