MEMORANDUM FOR SGDTT
ATTN: CAPT SARAH M RINGDAHL

FROM: 59 MDW/SGVU

SUBJECT: Professional Presentation Approval

1. Your paper, entitled *The Relationship between Fatty Liver Disease and Periodontal Disease* presented at/published to *American Academy of Dental Research (AADR) San Francisco, CA, 22 March 2017* in accordance with MDWI 41-108, has been approved and assigned local file #17144.

2. Pertinent biographic information (name of author(s), title, etc.) has been entered into our computer file. Please advise us (by phone or mail) that your presentation was given. At that time, we will need the date (month, day and year) along with the location of your presentation. It is important to update this information so that we can provide quality support for you, your department, and the Medical Center commander. This information is used to document the scholarly activities of our professional staff and students, which is an essential component of Wilford Hall Ambulatory Surgical Center (WHASC) internship and residency programs.

3. Please know that if you are a Graduate Health Sciences Education student and your department has told you they cannot fund your publication, the 59th Clinical Research Division may pay for your basic journal publishing charges (to include costs for tables and black and white photos). We cannot pay for reprints. If you are a 59 MDW staff member, we can forward your request for funds to the designated Wing POC at the Chief Scientist’s Office, Ms. Alice Houty, office phone: 210-292-8029; email address: alice.houty.civ@mail.mil.

4. Congratulations, and thank you for your efforts and time. Your contributions are vital to the medical mission. We look forward to assisting you in your future publication/presentation efforts.

LINDA STEEL-GOODWIN, Col, USAF, BSC
Director, Clinical Investigations & Research Support

*Warrior Medics — Mission Ready — Patient Focused*
INSTRUCTIONS
USE ONLY THE MOST CURRENT 59 MDW FORM 3039 LOCATED ON AF E- PUBLISHING

1. The author must complete page two of this form:
   a. In Section 2, add the funding source for your study [e.g., 59 MDW CRD Graduate Health Sciences Education (GHSE) (SG5 O&M); SG5 R&D; Tri-Service Nursing Research Program (TSNRP); Defense Medical Research & Development Program (DMRP); NIH; Congressionally Directed Medical Research Program (CDMRP); Grants; etc.]
   b. In Section 2, there may be funding available for journal costs, if your department is not paying for figures, tables or photographs for your publication. Please state “YES” or “NO” in Section 2 of the form, if you need publication funding support.

2. Print your name, rank/grade, sign and date the form in the author's signature block or use an electronic signature.

3. Attach a copy of the 59 MDW IRB or IACUC approval letter for the research related study. If this is a technical publication/presentation, state the type (e.g., case report, QA/QI study, program evaluation study, informational report/briefing, etc.) in the “Protocol Title” box.

4. Attach a copy of your abstract, paper, poster and other supporting documentation.

5. Save and forward, via email, the processing form and all supporting documentation to your unit commander, program director or immediate supervisor for review/approval.

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8. The 59 CRD/Publications and Presentations Section will route the request form to clinical investigations, 502 ISGJAC (Ethics Review) and Public Affairs (59 MDW/PA) for review and then forward you a final letter of approval or disapproval.

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NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement:
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"The voluntary, fully informed consent of the subjects used in this research was obtained as required by 32 CFR 219 and DODI 3216.02_AFI 40-402."

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"The experiments reported herein were conducted according to the principles set forth in the National Institute of Health Publication No. 80-23, Guide for the Care and Use of Laboratory Animals and the Animal Welfare Act of 1966, as amended."
The Relationship between Fatty Liver Disease and Periodontal Disease

Title of Material to Be Published or Presented:
The Relationship between Fatty Liver Disease and Periodontal Disease

Funding Received for This Study: No

Is This Material Classified? No

Is This Material Subject to Any Legal Restrictions for Publication or Presentation Through a Collaborative Research and Development Agreement (CRADA), Material Transfer Agreement (MTA), Intellectual Property Rights Agreement Etc.? No

Material is for: Domestic Release

Check Appropriate Box or Boxes for Approval with This Request. Attach Copy of Material to Be Published/Presented:

11a. Publication/Journal

11b. Published Abstract

11c. Poster (To be demonstrated at meeting; name of meeting, city, state, and date of meeting.)
American Academy of Dental Research (AADR), San Francisco, CA; 22 Mar 2017

11d. Platform Presentation (At civilian institutions; name of meeting, state, and date of meeting)

11e. Other (Describe: name of meeting, city, state, and date of meeting)

Date:
March 20, 2017

59 MDW Primary Point of Contact (Last Name, First Name, M.I., email)
Ringdahl, Sarah M, sarah.m.ringdahl.mil@mail.mil

Duty Phone/Pager Number
210-292-8635

Authorship and Co-Author(s) List in the order they will appear in the manuscript:

<table>
<thead>
<tr>
<th>Last Name, First Name, M.I.</th>
<th>Grade/Rank</th>
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<td>UTHSCSA Periodontics Clinic</td>
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<td>Mealey, Brian</td>
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<td>Paredes, Angelo</td>
<td>O-4/Maj</td>
<td>59 MDW</td>
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<tr>
<td>Magulick, John</td>
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I certify any human or animal research related studies were approved and performed in strict accordance with 32 CFR 219, AFMAN 40-401J, and 59 MDW 41-108. I have read the final version of the attached material and certify that it is an accurate manuscript for publication and/or presentation.

Author’s Printed Name, Rank, Grade
Ringdahl, Sarah, Capt, O-3

Approving Authority’s Printed Name, Rank, Title
CHOL H. CHONG, Col, Periodontics Flight Commander

Author’s Signature
RINGDAHL, SARAH M 41046268310

Approving Authority’s Signature
CHOL H. CHONG 10393095889

Date
March 09, 2017
**PROCESSING OF PROFESSIONAL MEDICAL RESEARCH/TECHNICAL PUBLICATIONS/PRESENTATIONS**

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The Relationship Between Fatty Liver Disease and Periodontal Disease

S. Ringdahl1,2, C. Chong1, B. Mealey2, A. Paredes3, J. Magulick2
1US Air Force Post Graduate Dental School, Periodontics, San Antonio, Texas
2University of Texas Health Science Center at San Antonio, Department of Periodontics
3San Antonio Military Medical Center, Hepatology Clinic, San Antonio, Texas

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ABSTRACT

Periodontitis is a highly prevalent and destructive chronic disease. Numerous studies support an association between periodontal disease and other systemic diseases (diabetes, cardiovascular disease, chronic kidney disease, adverse pregnancy outcome, etc.). Non-alcoholic fatty liver disease (NAFLD) is a chronic inflammatory disease that is characterized by accumulation of triglycerides in and fat in the liver which may lead to fibrosis and even cirrhosis. The mechanism of this destruction is due to activation of inflammatory cells and upregulation of cytokines, much like the chronic inflammatory destruction seen in periodontal disease. The association between these two diseases has never been investigated. A reasonable mechanism in which periodontal disease may play a role in the destruction seen in NAFLD is through the system release of pro-inflammatory cytokines and proinflammatory response which may subsequently lead to the changes seen in the liver. The purpose of this cross-sectional study is to investigate the relationship between periodontal disease and NAFLD.

RESULTS

A total of 64 patients have completed the liver biopsy and periodontal exam portions of this research project and were included in data analysis. The mean age for included patients was 56 years (range 32-78). Male patients comprised 61% of our population. The average number of teeth per patient was 25.45 (range 15-30).

None of the patients included in this study were current smokers, however, 28% were former smokers. Average BMI was 33.3 (range 24-44.3), 54% of the subjects had diagnosis of type II diabetes mellitus.

Of the patients completing study protocol (total of 64) 78% of included patients had some degree of periodontal disease with 28% having mild, 33% moderate, and 17% having severe periodontal disease (See graph below).

When evaluating the breakdown of periodontal disease severity by liver diagnosis, in the group with fatty liver disease without cirrhosis (LDx1), 78% had some degree of periodontal disease, with 34% being mild, 22% moderate, and 22% having severe periodontal disease. In the patients with mild liver cirrhosis, 83% had some degree of periodontal disease, with 26% having mild, 48% having moderate, and 9% having severe disease. In the group of patients with more extreme liver cirrhosis, 71% had some degree of periodontal disease with 21% having mild, 29% moderate, and 21% having severe disease (see graph below).

The Spearman rank correlation coefficient reached significance when comparing AST and ALT values to the periodontal diagnosis (AST: 0.33 (p=0.02) and ALT: 0.43 (p=0.002) and the presence or absence of periodontal disease (AST: 0.36 (p=0.047) and ALT: 0.34 (p=0.011)) ALT values were also inversely related to the percentage of sites with CAL 3 mm (0.29 (p=0.04)).

The statistical analysis of the liver diagnosis to the various periodontal disease measures of extent and severity (percentage of sites with PD 5 mm, percentage of sites with CAL 3 mm, mean PD, mean CAL, bleeding index, and plaque index), found none of the correlation coefficients to be significant.

DISCUSSION

In a preliminary data analysis of this cross-sectional study evaluating the relationship between periodontal disease and non-alcoholic fatty liver disease, there was no statistical relationship between severity of NAFLD and periodontal disease severity or extent. A statistically significant inverse relationship between periodontal disease diagnosis and AST and ALT values was seen. A significant inverse relationship with ALT value and percentage of sites with 3 mm CAL was also seen.

Although our number of subjects is too small to draw conclusions in regard to prevalence, there appears to be a larger proportion of periodontal disease in this population of patients with NAFLD than in the general US population.

Continued research will focus on increasing number of subjects and analyzing specific inflammatory cytokine values (IL-1, IL-6, IL-8, TNF-α, CRP), CD68 ratio and presence or absence of CMI antibodies to the severity of periodontal disease and NAFLD.

REFERENCES


DISCLAIMER

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