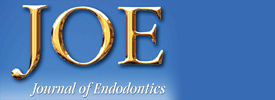
[](http://www.jendodon.com/home)

[Mobile](http://www.jendodon.com/content/mobileInfo)

* [Mobile Orange](http://www.journalbrandedsolutionsmobile.com/)
* [RSS Feeds [C:\Users\Admin\Desktop\ابحاث 2013-2015\البحث 3_files\feed-icon-14x14.png](http://www.jendodon.com/rss)](http://www.jendodon.com/rss)
* [Login](https://secure.jbs.elsevierhealth.com/action/showLogin?redirectUri=http%3A%2F%2Fwww.jendodon.com%2Farticle%2FS0099-2399%2812%2901090-4%2Fabstract&code=joen-site)
* [Register](https://secure.jbs.elsevierhealth.com/action/registration?redirectUri=http%3A%2F%2Fwww.jendodon.com%2Farticle%2FS0099-2399%2812%2901090-4%2Fabstract&journal=joen&code=joen-site)

[Register as a Guest](https://secure.jbs.elsevierhealth.com/action/registration?redirectUri=http%3A%2F%2Fwww.jendodon.com%2Farticle%2FS0099-2399%2812%2901090-4%2Fabstract&journal=joen&code=joen-site)

[Register and Claim Your Subscription](https://secure.jbs.elsevierhealth.com/action/activateClaim?journalCode=joen&code=joen-site)

* [Subscribe](https://secure.jbs.elsevierhealth.com/action/ecommerce?journal=joen&code=joen-site)
* [**Articles and Issues**](http://www.jendodon.com/article/S0099-2399(12)01090-4/abstract)
  + [**Articles in Press**](http://www.jendodon.com/inpress)
  + [**Current Issue**](http://www.jendodon.com/current)
  + [**Past Issues**](http://www.jendodon.com/issues)
  + [**Supplements**](http://www.jendodon.com/supplements)
* [**Sponsored Collections**](http://www.jendodon.com/article/S0099-2399(12)01090-4/abstract)
  + [**Reciprocating File Research**](http://www.jendodon.com/content/reciprocatingfileresearch)
* [**For Authors/Reviewers**](http://www.jendodon.com/article/S0099-2399(12)01090-4/abstract)
  + [**Author information**](http://www.jendodon.com/authorinfo)
  + [**Copyright Permissions**](http://www.elsevier.com/journal-authors/obtain-permission)
  + [**Guidelines for Publishing Papers in JOE**](http://www.aae.org/publications-and-research/journal-of-endodontics/authors-and-reviewers/guidelines-for-publishing-papers-in-the-joe.aspx)
  + [**Language Editing**](http://www.elsevier.com/journal-authors/author-services)
  + [**Reviewer Information**](http://www.jendodon.com/content/reviewers)
  + [**Submit Your Manuscript**](http://ees.elsevier.com/joe/)
* [**Journal Info**](http://www.jendodon.com/article/S0099-2399(12)01090-4/abstract)
  + [**About the Journal**](http://www.jendodon.com/aims)
  + [**Activate Online Access**](http://www.jendodon.com/claim)
  + [**Contact Information**](http://www.jendodon.com/contact)
  + [**Editorial Board**](http://www.jendodon.com/content/editorialboard)
  + [**Information for Advertisers**](http://www.elsmediakits.com/journal_home/details/JOEN)
  + [**Mobile Access**](http://www.jendodon.com/content/mobileaccessinstructions)
  + [**New Content Alerts**](http://www.jendodon.com/user/alerts/savetocalert)
  + [**Pricing Information**](http://www.jendodon.com/pricing)
  + [**Product Catalog Description**](http://www.journals.elsevier.com/journal-of-endodontics/)
  + [**QR Codes**](http://www.jendodon.com/pb/assets/raw/Health%20Advance/journals/joen/QRcodes.pdf)
* [**Subscribe**](http://www.jendodon.com/pricing)
* [**AAE**](http://www.jendodon.com/article/S0099-2399(12)01090-4/abstract)
  + [**About the AAE**](http://www.jendodon.com/societyinfo)
  + [**AAE Website**](http://www.aae.org/)
  + [**Online CE for JOE**](http://www.aae.org/livelearningcenter)
* [**More Periodicals**](http://www.jendodon.com/article/S0099-2399(12)01090-4/abstract)
  + [**Find a Periodical**](http://www.journals.elsevierhealth.com/periodicals/home)
  + [**Find a Portal**](http://www.journals.elsevierhealth.com/periodicals/home/portals)
  + [**Go to Product Catalog**](http://www.elsevierhealth.com/)



Top of Form



Search Terms Search within Search [Advanced Search](http://www.jendodon.com/search/advanced?seriesIssn=0099-2399&searchType=advanced&journalCode=joen) 



Bottom of Form

[< Previous Article](http://www.jendodon.com/article/S0099-2399(13)00142-8/abstract)

[Next Article >](http://www.jendodon.com/article/S0099-2399(13)00204-5/abstract)

[**June 2013**](http://www.jendodon.com/issue/S0099-2399(13)X0006-8)Volume 39, Issue 6, Pages 752–758

[Switch to Standard ViewSwitch to Enhanced View](http://www.jendodon.com/article/S0099-2399(12)01090-4/abstract)

Altered Coronal Tissue of the Human Dental Pulp in Chronic Hepatitis C Virus Infected Patients

[Mohammed EL-Awady Grawish](javascript:void(0);)

**x**

Mohammed EL-Awady Grawish

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Grawish,%20Mohammed%20EL-Awady&prod=HA)

Affiliations

* Department of Oral Medicine and Diagnostic Science, College of Dentistry, King Saud University, Riyadh, Saudi Arabia
* Department of Oral Biology, Faculty of Dentistry, Mansoura University, Mansoura, Egypt

, PhD

,

[Rita Khounganian](javascript:void(0);)

**x**

Rita Khounganian

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Khounganian,%20Rita&prod=HA)

Affiliations

* Department of Oral Medicine and Diagnostic Science, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

, PhD

,

[Magdy K. Hamam](javascript:void(0);)

**x**

Magdy K. Hamam

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Hamam,%20Magdy%20K.&prod=HA)

Affiliations

* Department of Oral Medicine and Diagnostic Science, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

, PhD

,

[Ahmed Ragheb Zaher](javascript:void(0);)

**x**

Ahmed Ragheb Zaher

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Zaher,%20Ahmed%20Ragheb&prod=HA)

Affiliations

* Department of Oral Biology, Faculty of Dentistry, Mansoura University, Mansoura, Egypt

Correspondence

* Address requests for reprints to Dr Ahmed Ragheb Zaher, Department of Oral Biology, Faculty of Dentistry, Mansoura University, Mansoura, Egypt, PB 35516.

, PhD[correspondence](javascript:void(0);)

**x**

Ahmed Ragheb Zaher

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Zaher,%20Ahmed%20Ragheb&prod=HA)

Affiliations

* Department of Oral Biology, Faculty of Dentistry, Mansoura University, Mansoura, Egypt

Correspondence

* Address requests for reprints to Dr Ahmed Ragheb Zaher, Department of Oral Biology, Faculty of Dentistry, Mansoura University, Mansoura, Egypt, PB 35516.

[email](mailto:ahmedrz2005@yahoo.com)

,

[Doha Hegazy](javascript:void(0);)

**x**

Doha Hegazy

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Hegazy,%20Doha&prod=HA)

Affiliations

* Hepatology Research Group, Peninsula College of Medicine and Dentistry, University of Plymouth, Plymouth, United Kingdom

, PhD

,

[Salwa Abd El-Raof El-Negoly](javascript:void(0);)

**x**

Salwa Abd El-Raof El-Negoly

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=El-Negoly,%20Salwa%20Abd%20El-Raof&prod=HA)

Affiliations

* Department of Dental Biomaterials, Faculty of Dentistry, Mansoura University, Mansoura, Egypt

, PhD

,

[Ghada Hassan](javascript:void(0);)

**x**

Ghada Hassan

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Hassan,%20Ghada&prod=HA)

Affiliations

* Department of Oral Biology, College of Applied Medical Science, King Saud University, Riyadh, Saudi Arabia

, MSc

,

[Manal Mohamed Zyada](javascript:void(0);)

**x**

Manal Mohamed Zyada

[Search for articles by this author](http://www.jendodon.com/action/doSearch?searchType=authorLookUp&author=Zyada,%20Manal%20Mohamed&prod=HA)

Affiliations

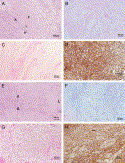
* Department of Oral Pathology, Faculty of Dentistry, Mansoura University, Mansoura, Egypt

, PhD

Published Online: January 21, 2013

DOI: <http://dx.doi.org/10.1016/j.joen.2012.11.031>

Figures



**Figure 1**

Photomicrograph (original magnification, ×200) showing healthy human coronal tissues of the dental pulp at the central area stained with H&E (*A*) revealed spindle-shaped fibroblast stroma cells (F), thick-walled arteriole with muscular layer (A), thin-walled venule (V) and lymphatic (L). Heterogeneous colloid of acidic mucins and other carboxylated or weakly sulfated acid mucosubstances (*blue*), basement membranes, glycogen, and neutral mucosubstances (*magenta*), and mixtures of neutral and acidic mucosubstances (*purple*) evidenced in alcian blue/PAS (*B*). In van Gieson (*C*) stained preparations, collagen stains (*pink to deep red*), the cytoplasm of the fibroblasts, the muscle fibers in the wall of the blood vessels, and fibrin (*yellow*), and the nuclei of the fibroblasts (*brownish*). The FN immunostain (*D*) revealed a rich extracellular network of FN (*brown*) in the ECM and around the blood vessels. The sections of chronic HCV patients stained with H&E (*E*) revealed disorganized pulp tissue, chronic inflammatory cell infiltrate consisting of lymphocytes and cells that morphologically are fibroblast-like, thickening, stenosis, and occlusion of large-sized blood vessel arteriole (A), collapsed venule (V) and lymphatic system (L). The deposits of acidic, neutral, and mixed mucins increased as evidenced in alcian blue/PAS (*F*). The amount of collagen fibers decreased in van Gieson (*G*). The distribution and quantity of the ECM FN are markedly decreased in FN immunostain (*H*). Scale bars = 100 μm.

Abstract

Introduction

Hepatitis C virus (HCV) infection is characterized by a high rate of chronicity and concerns 170 million individuals worldwide. Extrahepatic manifestations are frequently observed in patients with chronic viral hepatitis. Although extrahepatic manifestations do exist with all hepatitis viruses, they are more commonly associated with chronic HCV infection. This study aimed to evaluate qualitatively and quantitatively the effect of chronic HCV infection on the coronal tissue of the human dental pulp.

Methods

Thirty sound impacted teeth were obtained from healthy individuals as healthy controls. The patient group included another 30 sound impacted teeth obtained from chronic HCV–infected patients. The coronal pulp tissues were carefully removed, fixed, and processed to be stained with hematoxylin-eosin, alcian blue (2.5)/periodic acid–Schiff, van Gieson, and fibronectin.

Results

The tissue sections of chronic HCV patients revealed disorganized pulp tissue, chronic inflammatory cell infiltrate, thickening, stenosis and occlusion of large-sized blood vessel arteriole, and collapsed venule and lymphatic system. The acidic, neutral, and mixed mucins were increased, whereas the amount of collagen was decreased, accompanied with marked decrease in the distribution and quantity of fibronectin glycoprotein. Application of Kruskal-Wallis test showed that there were statistically significant changes between the 2 groups (*P* ≤ .05).

Conclusions

The coronal tissue of the dental pulp, like any other body tissues, is affected by chronic HCV infection, with an inappropriate cellularity, vasculature, and extracellular matrix proteins. The clinician should be alerted to these histologic changes and their subsequent implications.

Key Words:

[Coronal tissue](http://www.jendodon.com/action/doSearch?searchType=quick&occurrences=all&ltrlSrch=true&searchScope=series&searchText=Coronal%20tissue&seriesISSN=0099-2399), [hepatitis C virus infection](http://www.jendodon.com/action/doSearch?searchType=quick&occurrences=all&ltrlSrch=true&searchScope=series&searchText=hepatitis%20C%20virus%20infection&seriesISSN=0099-2399), [histochemical](http://www.jendodon.com/action/doSearch?searchType=quick&occurrences=all&ltrlSrch=true&searchScope=series&searchText=histochemical&seriesISSN=0099-2399), [human dental pulp](http://www.jendodon.com/action/doSearch?searchType=quick&occurrences=all&ltrlSrch=true&searchScope=series&searchText=human%20dental%20pulp&seriesISSN=0099-2399), [immunohistochemical](http://www.jendodon.com/action/doSearch?searchType=quick&occurrences=all&ltrlSrch=true&searchScope=series&searchText=immunohistochemical&seriesISSN=0099-2399)

To access this article, please choose from the options below