

Oral Health Status of Cirrhotic Patients in List of Liver Transplantation and of Viral Hepatitis Carriers

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Abstract

Introduction: Infections are frequent causes of morbidity and mortality after liver transplantation and a major cause of decomposition in cirrhotic patients awaiting liver transplantation. Cirrhotic patients with poor oral health status may present increased susceptibility to systemic infections in the pre and/or post-operative liver transplantation period. **Objective:** To compare oral health status of liver transplantation patients with chronic viral hepatitis carriers.

Methods: This prospective, concurrent study included 66 patients, 45 males (68.2%), observed from January, 2010 to December, 2011. Out of these 66 patients, 18 (27%) were waiting for liver transplantation and 48 (73%) were non-cirrhotic hepatitis patients: 16 (24%) were Hepatitis C Virus carriers, 17 (26%) Hepatitis B Virus carriers and 15 (23%) non-HCV and non-HBV hepatitis. All patients were evaluated at the Stomatology Service from Federal University of Bahia. Oral health status evaluation was performed according to WHO Standards.

Results: Forty-seven patients (71.2%) experienced reduced salivary flow. Patients in the liver transplantation group had more gingivitis ($p=0.04$), periodontitis ($p=0.04$) and a slightly higher DMFT (Decayed, Missing and Filled Teeth) mean (19.11) when compared with those with less severe liver disease. However, when comparing the liver transplantation group with non-cirrhotic HCV carriers, there was no statistical significance.

Conclusion: Liver transplantation patients have poorer oral health than patients with less severe hepatitis. Hepatitis C carriers also present severe periodontal disease, requiring stomatological preventive and curative intervention.

Keywords: Liver transplantation; Oral pathology; Oral health

Introduction

Infections are responsible for liver cirrhosis decomposition in patients awaiting liver transplantation. Infections are also a frequent cause of morbidity and mortality in patients with chronic liver disease [1,2]. Infection complications are also often seen after liver transplantation (LT), due to the additive effects of surgery, intensive care procedures and immunosuppression [3]. Cirrhotic patients with poor oral health, particularly those with chronic infections such as abscesses, periapical lesions and periodontitis, are more susceptible to develop systemic infections [2-14]. In many cases, patients with liver failure, secondary to viral infection, present oral disorders due to the use of antiretroviral drugs, requiring a stomatologist in the medical staff in order to treat the systemic effects of oral disease [15]. The objective of the present study is to compare the oral health status of LT patients with that of chronic viral hepatitis carriers.

Methods

Study Population

This prospective, concurrent study included 66 patients, 45 males (68.2%), attending to the Stomatology Service of the Faculty of Dentistry, Federal University of Bahia, Salvador, Bahia, Brazil, between January, 2010 and December, 2011. Age ranged 23-69 years, with mean 50.2 and median 52. The following data were recorded: age, sex, skin color, education, income, cirrhosis etiology and dental care data. Liver Transplantation Patients and Less Severe Liver Disease Patients showed similar sociodemographic characteristics, except sex (Table 1).

Both extra-oral and intra-oral examinations were conducted and carious lesions were diagnosed by clinical examination and radiographs. Gingival index, probing depth and clinical attachment loss were measured by a periodontal probe in accordance with the European Association of Dental Public Health Standards. This organization criteria were used to define the severity of periodontitis

[16,17]. Numbers of decayed, missing and filled teeth were recorded by the DMFT index, according to WHO [18]. Salivary flow exams [19] classified a flow between 1 and 3 mL/min as normal, while less than 1 mL/min was considered to be reduced. The liver cirrhosis was analyzed in relation to the demographical, clinical and analytical variables using EPI-INFO 3.5.1 program. This study protocols were approved by the Ethical Review Board of the Faculty of Dentistry at Federal University of Bahia (FR: 345966, CAAE: 0018.0.368.000-10) and are in accordance with Brazilian National Health Council Resolution 196/96, as well as the Sixth Revision of the Declaration of Helsinki, 2008.

Results

Of the 66 patients, 18 (27%) were waiting for LT and 48 (73%) were non-cirrhotic hepatitis patients: 16 (24%) Hepatitis C Virus carriers undergoing antiviral treatment, 17 (26%) Hepatitis B Virus carriers and 15 (23%) non-HCV and non-HBV hepatitis (idiopathic or autoimmune hepatitis). All diagnoses of liver disease were established by the Unit of Gastroenterology and Hepatology at Federal University of Bahia.

Concerning the group of the 18 patients waiting for LT, 33% had liver cirrhosis secondary to HCV infection. Comparing patients in

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the list of LT to patients with less severe LD, it was observed that the LT group had higher proportion of gingivitis ($p = 0.04$), periodontitis (0.04), as well as a slightly higher ($p = 0.13$). DMFT-index mean of (19.11 versus 16.56). Radiographs of some selected patients from LT group are shown in Figure 1.

Patients from the LT group did not differ from those with non-cirrhotic HCV carriers concerning the presence of gingivitis ($p=0.27$) and periodontitis ($p=0.12$), indicating that both groups had poor oral health. HBV carriers had better oral health status when compared to the other groups ($p = 0.05$). A total of 43 (65.2%) individuals complained of chewing difficulties and 47 (71.2%) patients experienced reduced salivary flow. The prevalence of soft tissue lesions is shown in Table 2. LT patients presented soft tissue oral lesions more frequently (33.3%) than patients with less severe liver disease (12.6%).

Discussion

Many factors may influence the evolution of periodontal disease, tooth decay and oral infections, like the lack of access to proper dental care, education level, and use of medications that may result in a reduction of salivary flow, stress, cognitive loss and depression [20-22]. In the present study, patients from both groups (Liver Transplantation or Less Severe Liver Disease) had similar sociodemographic characteristics.

The foci of odontogenic infections are not treated solely with antibiotic therapy. Effective treatment requires the removal of abscesses

and intraosseous lesions, as well as treatment of periodontitis. Untreated foci, associated with poor level of oral hygiene, increase susceptibility to infection, especially in patients with a compromised overall health state, as well as those who are immunocompromised [1-3]. A case report of hepatic pyogenic abscess, probably caused by periodontal disease bacteria, corroborates this correlation [23]. Although the literature is not consistent with respect to a correlation between oral infection and pre- and post-transplant complications, a survey of 294 organ transplant clinics in the United States demonstrated the need for more concerted efforts with respect to patient oral health by multidisciplinary transplant teams [9].

The present study corroborates the literature [2,4,6] that describes a high frequency of advanced periodontal disease and low rates of oral health in patients waiting for liver transplantation. However, the oral health of this group was similar to that of HCV carriers undergoing antiviral treatment, showing that both groups need attention to oral preventive and curative measures. These data are according to literature that correlates hepatitis C infection [15] with a poor state of oral health.

Despite of the report of hemorrhagic complications in LCD patients [12], which contraindicates surgical treatment of these patients, the Stomatology Clinic, Faculty of Dentistry at Federal University of Bahia, has developed protocols to care for patients with liver cirrhosis. In most cases when surgery is required, extractions are performed in a hospital environment with administration of blood products, particularly in cases of severe liver disease. The postoperative period is accompanied

Variables	Liver Transplantation Patients		Less Severe Liver Disease Patients		P-value
	N=18	%	N=48	%	
Sex					0.003
Female	1	(6.0)	20	(42.0)	
Male	17	(94.0)	28	(58.0)	
Age (years)					
20 to 30 years	2	(11.0)	5	(10.0)	0.257
31 to 50 years	4	(22.0)	21	(44.0)	
> 50 years	12	(67.0)	22	(46.0)	
Skin color					0.615
White	4	(22.0)	11	(23.0)	
Not White	14	(78.0)	37	(77.0)	
Education (years)					
≤ 8	16	(89)	43	(89)	0.608
> 8	2	(11)	5	(11)	
Income					
< 1 MW*	1	(6.0)	7	(15.0)	0.152
1-2 MW	5	(28.0)	22	(46.0)	
≥ 2-5 MW	10	(55.0)	18	(37.0)	
> 5 MW	2	(11.0)	1	(2.0)	

*MW= Minimum Wage, approximately US\$ 299.00

Table 1: Socio-demographic characteristics of the studied population.

Soft tissue oral lesions	Liver transplantation Patients (n=18)		Less severe liver disease Patients (n=48)	
	n	%	n	%
Actinic cheilitis	-	0.0	1	2.1
Denture stomatitis	1	5.5	1	2.1
Leukoplakia	-	0.0	1	2.1
Ulcer	-	0.0	2	4.2
HPV lesions	1	5.5	-	0.0
Pigmentation	3	16.5	-	0.0
Lichen planus	1	5.5	1	2.1
Total	6	33.3	6	12.6

Table 2: Frequency of soft tissue lesions according to groups of disease severity in 66 chronic liver disease patients.

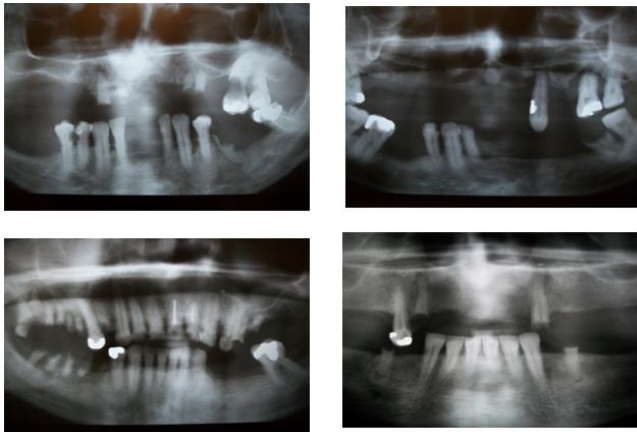


Figure 1: Panoramic Rx from LT patients, showing foci of oral infection.

by the hepatology team at the Transplant Clinic and Gastroenterology Service from Federal University of Bahia, which allows a proper assessment of liver and kidney function, and appropriate management of any arising complications. Dental treatment, coordinated in conjunction with the hepatology team, may be a factor that can improve survival rates in patients with severe liver disease [2].

The high frequency of a partially edentulous dental condition and periodontal disease, as well as the high DMFT index, demonstrated that cirrhotic patients on the transplant waiting list as well patients with less severe liver disease are far from meeting the global goal set for 2010 as established by the World Health Organization, which estimates that in an age range of 35–44 years, 96% of patients should present at least 20 functional teeth and less than 2% should be edentulous [24].

The evidence of soft tissue lesions indicates the need for stomatological examination in cirrhotic patients in order to prevent oral cancer which may develop due to trauma associated with poor hygiene, especially in cases where patients use dental prosthesis. The cases of stomatitis lesions in this study were associated with poor hygiene in dental prosthesis, which corroborates with findings in the literature associating poor hygiene with the proliferation of *Candida albicans* [6,25]. Literature reports a reduced salivary flow in patients with hepatitis C, cirrhosis and those who underwent liver transplantation [2,5,6]. In this study, a decrease in salivary flow was observed in 71.2% of chronic liver disease patients, contributing to the development of caries, periodontal disease and other lesions in the oral mucosa. Concerning salivary glands, literature also describes the occurrence of HCV-related sicca syndrome ranging from 4 to 57% of chronic HCV carriers which may contribute to hypo salivation [26].

Gastroenterology and liver transplantation clinics in Brazil still do not offer an integrated dental treatment component in coordination with gastroenterology and transplant teams, making it necessary for the National Health System to require both dental care in an outpatient environment as well as hospitalization to perform dental surgery in the field of Surgery and Maxillofacial Traumatology. In outpatient hepatology clinics, where many patients are treated for viral hepatitis, there still exists a need for preventive actions to promote a better state of oral health in patients.

Conclusion

The present study has shown that, cirrhotic patients awaiting liver

transplantation have poorer oral health status when compared with patients with less severe LD. HCV patients also have severe Periodontal Disease, requiring stomatological preventive intervention in patients with LD.

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