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ORAL MANIFESTATIONS IN LIVER DISEASES - A CLINICAL STUDY

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ABSTRACT

Introduction: Liver is a complex organ and is susceptible to a variety of adverse affects due to intake of alcohol or drugs and infectious disease such as viral hepatitis or liver malignancies etc. The oral cavity shows evidence of liver dysfunctions with the presence of hemorrhagic changes, petechiae, gingival bleeding, hematoma, etc. **Aims and Objectives:** The purpose of this study was to evaluate i) The presence of oral manifestations in various liver diseases (both infectious and non-infectious and in acute and chronic conditions), ii) To investigate the commonly occurring oral manifestation in various liver disorder patients and iii) To co-relate the incidence of oral manifestations in association with age and gender. **Materials and Methods:** 150 patients were selected from the Department of Hepatology, S.C.B Medical College & Hospital, Cuttack, Odisha of which 115 were males and 35 were females, suffering from various liver disorders and observed the possible associations with oral diseases. **Results:** The prevalence of periodontitis(14%), attrition(24%) and halitosis(23.3%) in patients suffering from liver diseases was higher in our study. We found less prevalence of lichen planus(1.3%) and candidiasis(2%), which was probably due to compromised immune status of the body. **Conclusion:** Chronic liver disease affects different systems of our body and the extrahepatic manifestations can also occur in

oral cavity. The study highlighted the oral findings which includes bacterial infection & fungal such as periodontitis and candidiasis respectively, potential malignant disorder such as lichen planus, which aids in providing knowledge in oral health care and their association to systemic conditions found in this present study of liver associated diseases.

KEYWORDS: Liver cirrhosis, Hepatitis, Candidiasis, Periodontitis, Lichen planus.

INTRODUCTION

Liver is the largest internal organ of our body and second largest organ after skin. The oral cavity is an important anatomical location with a role in many critical physiologic processes, such as digestion, respiration and speech. The mouth is frequently involved in conditions that affect the skin & other organs. Oral involvement is seen in systemic conditions such as Diabetes mellitus, liver disorders, gastrointestinal diseases etc and many infectious which can be bacterial, fungal or viral. Liver serves many essential functions and the diseases associated with it manifests in our oral cavity apart from systemic changes.

Liver diseases are one of the most common systemic disorders. Based upon their onset, extent of organ damaged and impaired organ functions, these diseases can be classified as acute or chronic. They can also be classified as infectious which includes hepatitis A, B, C, D and E or non-infectious due to substance abuse such as alcohol and drugs, e.g., paracetamol, ketoconazole, methotrexate etc. They can range from steatosis or fatty liver to hepatocellular carcinoma, including hepatitis, fibrosis and cirrhosis of liver.[1,2] Dysfunction in liver includes alteration in body's metabolism of carbohydrates, fats, lipids, proteins, bilirubin, hormones etc.[1,3] The oral cavity may show evidence of these dysfunctions and some commonly occurring manifestations are gingival bleeding, hematoma, lichen planus, ecchymosis, delayed mucosal healing after surgery etc. Manifestations seen in oral cavity in patients suffering from chronic Hepatitis C Virus (HCV) liver disease are xerostomia, lichen planus, Sjogrens syndrome, sialadenites and mouth cancer.[4,5,6] Periodontal diseases and bad oral hygeine are the early complications found in patients with hepatitis B and C.[7,8] Malignant condition of liver like hepatocellular carcinoma has been reported with metastasis to oral region which showed mandibular swelling as initial manifestation.[9] The aim of the present study was to evaluate the presence of different oral manifestations in various liver diseases (both infectious and non-infectious and in both acute and chronic conditions).

MATERIALS AND METHODOLOGY

A cross-sectional study was conducted by selecting patients suffering from various liver diseases. Patients diagnosed as acute or chronic liver disease by clinical examination, liver function tests and morphological examination was selected from the Department of Hepatology (out-patient and in-patient), Sri Ram Chandra Bhanja (S.C.B) Medical College and Hospital, Cuttack, Odisha. The total number of patients examined was 150, of which 115 were males and 35 were females. Patients from different socio-economic status and standards were analyzed with relevance to case history, clinical and oral examination. Ethical committee clearance was obtained for the study.

Previously diagnosed patients suffering from liver disorders which were subjected to detailed systemic, oral and dental examination as well as laboratory investigation like liver function test which includes serum glutamic oxaloacetic transaminase (SGOT), serum glutamic pyruvic transaminase (SGPT), serum albumin, serum bilirubin and alkaline phosphatase were examined for the presence of gingival bleeding, oral lichen planus, xerostomia, sialadenitis, stomatitis, periodontal disease and other manifestations. Appropriate statistical analysis was done which includes chi-squared, t-test and Mann-Whitney U tests.

INCLUSION CRITERIA

• Patients diagnosed with acute or chronic liver disease.
• Both the genders are included in this study.
• Age groups from 17-77 years
• Without Diabetes mellitus & Hypertension

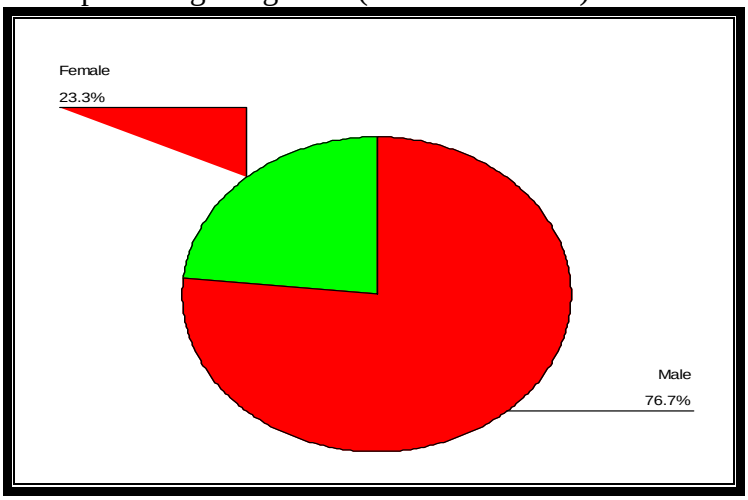
EXCLUSION CRITERIA

• Individuals with other systemic diseases.
• Patients who are in terminal stage.

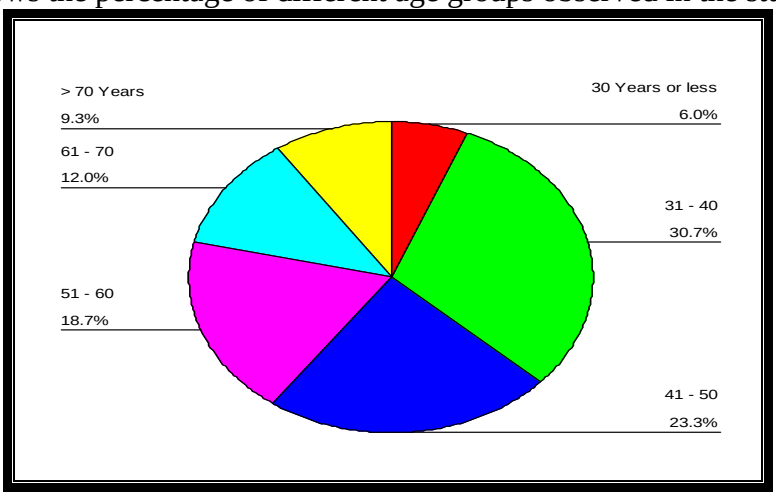
RESULTS

A total of 150 patients suffering from various liver disorders, comprising of both the genders were observed in the present study of which male was 115 and female was 35, giving a percentage of 76.7% and 23.3% respectively (Pie-chart 1) and ages of 17 -77 year patients (Pie-chart 2).

Pie-chart 1: Shows the percentage of gender (male and female) observed in the study.



Pie-chart 2: Shows the percentage of different age groups observed in the study.

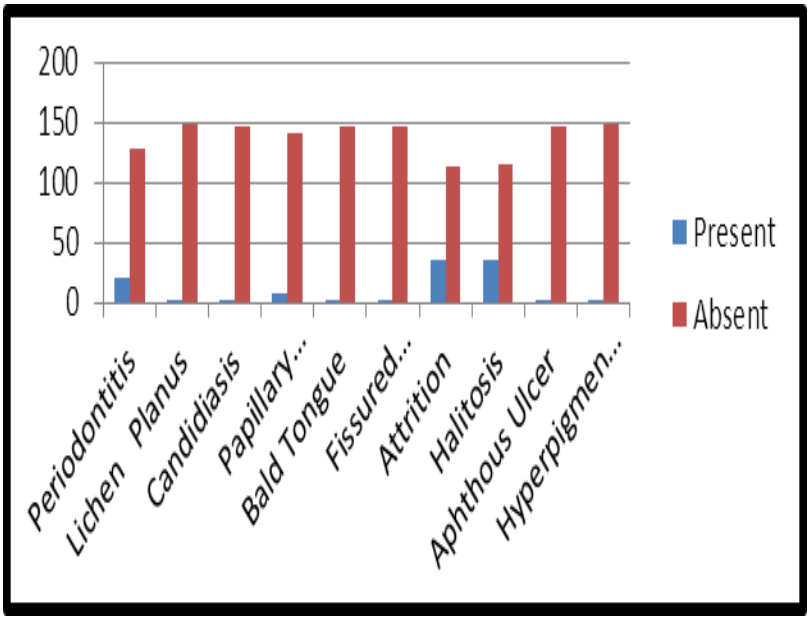


The present study comprises 24.7% of alcoholic liver disease, 14% of cirrhosis of liver, 40% of viral hepatitis (jaundice), 4.7% of hepatitis B, 12.7% of hepatomegaly, 8% of hepatic carcinoma and 22.7% of alcoholic cirrhosis patients (Table 1).

Table 1: Various liver disorders and symptomatic conditions observed during the study.

	Present		Absent		Total	
	N	%	N	%	N	%
Alcoholic Liver Disease	37	24.7	113	75.3	150	100.0
Cirrhosis of Liver	21	14.0	129	86.0	150	100.0
Viral hepatitis(Jaundice)	60	40.0	90	60.0	150	100.0
Hepatitis B	7	4.7	143	95.3	150	100.0
Hepatomegaly	19	12.7	131	87.3	150	100.0
Hepatic Carcinoma	12	8.0	138	92.0	150	100.0
Alcoholic Cirrhosis	34	22.7	116	77.3	150	100.0

We observed variety of liver disorders and symptomatic conditions such as Cirrhosis of liver, Jaundice, Hepatitis B, Hepatomegaly, Hepatic carcinoma and alcoholic cirrhosis. During our study we found certain oral manifestations such as periodontitis, lichen planus, candidiasis, papillary atrophy of tongue, bald tongue, fissured tongue, aphthous ulcer, hyperpigmentation and halitosis (Graph 1).



Graph 1: Oral manifestations in various liver disorders.

The present study draws attention to some extrahepatic manifestations in both 115 male and 35 female which includes periodontitis "Fig. 1" seen in 21 male only (18.3%), lichen planus "Fig. 2" in 2 male only (1.7%), candidiasis "Fig. 3" in 2 male (1.7%) and 1 female (2.9%), papillary atrophy of tongue in 5 male (4.3%) and 3 female (8.6%), bald tongue "Fig. 4" in 2 male (1.7%) and 1 male (2.9%), fissured tongue "Fig. 5" in 3 male only (2.6%), halitosis in 29 male (25.2%) and 6 in female (17.1%), attrition "Fig. 6" of teeth in 35 male (30.43%) and 1 female (2.9%), aphthous ulcer "Fig. 7" in 1 male (0.9%) and in 2 female (5.7%) and hyperpigmented tongue "Fig. 8" in 1 male only (0.9%).

Fig. 1: periodontitis

Fig. 2: lichen planus

Oral mucosa

Fig. 3: candidiasis

Fig. 4: bald tongue

Fig. 5: fissured tongue

Fig. 6: attrition

Fig.7: aphthous ulcer

Fig. 8: hyperpigmented tongue

DISCUSSION

Liver diseases are generally caused due to chronic abuse alcohol and its products causing extensive damage to the liver. The symptoms related to liver dysfunction include both physical signs and a variety of symptoms related to digestive problems, blood sugar problems, immune disorders, abnormal absorption of fats and metabolism problems. Regardless of the systemic condition and habits, a wide range of oral manifestations are observed irrespective of the type and extent of liver dysfunction, both in an acute and chronic condition.

Bacterial infections are considered as common complications in liver disease patients and they are usually encountered with decrease immunity resulting inability to kill the bacteria and thus there is a greater risk of periodontal diseases in those patients. Cringuta Paraschiv et al[4] observed in their study, there were an increased percentage (46.66%) of patients with Periodontitis (69 patients) in the study group on 150 patients of Hepatitis B and was estimated probably due to high prevalence of diabetes in those patients. In our study, we found 21 patients (14%) with Periodontitis suffering from various liver disorders, however, irrespective of any systemic and metabolic disorders and possibly due to poor oral hygiene

with increasing age. Novacek G et al[10] observed in their study on 64 patients with alcoholic cirrhosis that there was an increase loss of attachment (p=0.02) due to poor dental care and alcohol abuse which showed male predominance. In our study, we found 34 patients with alcoholic cirrhosis, the periodontal status parameter (p=0.006) which could be due to poor maintenance of oral hygiene and chronic alcoholic abuse and was seen more in men, nearly significant co-relating with the previous study.

Lichen planus is a chronic inflammatory disease which can affect both the skin and mucous membrane with an obscured etiology. Many studies in the past has suggested the role of Hepatitis C virus (HCV) in the pathogenesis of lichen planus, however, HCV alone is not the causative factor for it. Cringuta Paraschiv et al[4] observed in their study, there were only 3 patients(1.3%) with oral lichen planus and 3 patients with oral lichen planus and cutaneous lichen planus among the 230 cases of viral hepatitis (hepatitis C) and was found occurring in patients over 60 years of age. In our study, we found only 2 patients (1.3%) with oral lichen planus alone which significantly co-related with the previous study and the affected patients were above 40 years of age. However, we couldn't get any cutaneous manifestation of lichen planus. Friedrich R.E et al[11] investigated a total of 156 patients with liver disorders and found 8 patients (5.1%) with lichen planus and LC Figueiredo et al[12] in their study of 126 patients found 6 patients (4.7%) with oral lichen planus which was significantly higher when compared to our study.

Oral candidiasis is usually considered as an opportunistic fungal infection caused mainly by *candida albicans* irrespective of age and the health status of an individual. Studies in the past have shown their incidence in common metabolic disorders such as diabetes mellitus and other situations such as patient with denture wearers and immune-compromised patients. Cringuta Paraschiv et al[4] observed in their study of 380 patients suffering from hepatitis B and C, there was 56 patients (14%) with oral candidiasis and was seen in prevalence with diabetes mellitus. Lins Kusterer[13] in his survey of 1222 patients on antibiotic prophylaxis in liver transplant cases, where 124 organisms were recovered at the surgical site infection, of which 8% were of candida species due to the immunosuppression therapy. In our study, we found significant decrease prevalence with oral candidiasis, affecting only 3 patients (2%) irrespective of any systemic and metabolic disorders. However, we didn't observe any case of liver transplantation and no patients were under immunosuppression therapy.

Aphthous ulcer or aphthae is characterized by formation of ulcer in mouth of varied etiology factors such as nutritional deficiency, stress, local trauma, immuno- dysregulations etc and is now considered as a common condition in general population. Sulka A et al[14] evaluated the oral mucosal lesions in 74 patients with chronic hepatitis and cirrhosis of liver, found only 1 patient (1.3%) with aphthae. In our study, we found 2 patients (2%) with aphthous ulcer which significantly co-related with the previous study.

Fissured tongue or referred to as scrotal or furrowed tongue characterized by formation of deep grooves or furrows in the dorsal part of the tongue. They are usually of unknown etiology, however, aging and environmental factors can contribute to its formation. Gonzalo Rojas et al[15] in their study on 40 organ transplant cases, of which there was 17 liver transplant cases and found 7 patients (17.5%) with fissured tongue and with an increase incidence in men. Dorota Olczak-Kowalczyk et al[16] in their study in children with chronic liver disease found fissured tongue as a manifestation due to vitamin deficiency. In our study, we found 3 patients (2%) with fissured tongue and were also predominantly found in men, however, we didn't encountered with any liver transplant cases during our study, giving an impression that it could be due to nutritional deficiency mainly vitamins.

Halitosis or in common terminology 'bad breath' characterized by unpleasant odor, usually due to poor dental care such as the presence of dental caries and periodontal disease. Ongole R et al[17] suggested that liver disease can produce some chemical compounds such as aliphatic acids, hydrogen sulphide etc, which gives a characteristic musty or mousey odor. We too found in our study that halitosis was a significant finding seen in 35 patients (23.3%), probably due to lack of maintenance of oral hygiene.

CONCLUSION

Liver has a unique complex system of mechanism and is susceptible to a variety of adverse effects caused due its dysfunction. However, some minimal injuries are tolerated due to its regeneration ability. A further or extensive liver damage can cause destruction of liver cells causing hepatitis, cirrhosis and even liver cancer which is considered to be one of the most common cancers in global population today. The causes for such damage varies from intake of alcohol and drugs to virus induced. Chronic liver disease affects not only the systemic condition of an individual but, many extrahepatic manifestations can also occur such as those in our oral cavity.

The present study accomplished with an evaluation of various oral manifestations in liver disorders patients. The study highlighted 10 oral findings which also included potential malignant disorder and fungal infection such as lichen planus and candidiasis. The causes for these manifestations were predicted ranging from immuno-compromised systemic conditions, chronic alcohol abuse, environmental factor such as stress, nutritional deficiency to poor maintenance of oral hygiene. However, we came across some few incidental findings such as papillary atrophy of tongue, hyperpigmented tongue and bald tongue which were not suggested extensively by investigators in the past studies.

Although the findings were relatively less significant within the limitations and criteria, the manifestations aids in providing knowledge in oral health care and their association to systemic conditions such as in this present study of liver associated disease.

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