

العدد

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أبحاث العدد:

Prevalence of
Hepatitis B and C
Among Patients
Attending
Emirates
International
University Dental
Clinics in Sana'a
City, Yemen

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Prevalence of Hepatitis B and C Among Patients Attending Emirates International University Dental Clinics in Sana'a City, Yemen

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انتشار التهاب الكبد الفيروسي بي وسي بين المرضى المترددون على عيادات طب الأسنان في الجامعة الإماراتية الدولية في مدينة صنعاء، اليمن

الباحثون:

عبدالباسط احمد الغوري- استاذ مشارك

- جامعة عمران- كلية الطب والعلوم الصحية
- الجامعة الاماراتية الدولية- كلية الطب والعلوم الصحية

ابراهيم زيد الشامي- استاذ دكتور

- جامعة صنعاء- كلية طب الاسنان
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- الجامعة الإماراتية الدولية- كلية الطب والعلوم الصحية

SUMMARY

Introduction:

Evaluation of the prevalence of Hepatitis B and C viruses among patients of dental clinics in Sana'a city (capital city) is essential to understand the local burden of this infection and to identify potential risk factors associated with its transmission.

Objective:

To evaluate the prevalence rate of HBV and HCV and risk factors associated with infections among patients attending Dental clinics- Emirates International University in Sana'a City, Yemen.

Rationale: To highlight the importance of routine screening before any dental procedure, especially before any oral surgical procedure such as tooth extraction.

Materials and Methods: This study was conducted in Emirates International University dental clinics in Sana'a City, Yemen. The period of study was 3 months, commencing from March 2023 to May 2023. The patients' demographic information was recorded. Blood samples were tested before dental extraction for the presence of infection by HBs Ag and anti-HCV at the Laboratory of Medical Department by using Immunochromatographic assay (ICT) technique. Prevalence was calculated as percentages, and chi-square test was used to assess categorical variables where a p-value of ≤ 0.05 was considered significant- by using SPSS version 26.

Results: Out of 385 patients, two had positive for HBV and one HCV collectively. Among them male more incidence than female. In addition, prevalence rate was (% 0.52) 2 for HBV and (%26 .0) 1 was with HCV. Risk factors for HCV were gender and clinical status of disease while age group with HBV.

Conclusion: The prevalence rate of HBV and HCV was low among Yemeni patients attending Emirates International University Dental Clinics. Pre-dental intervention screening for HBs Ag & HCV is a reasonable policy, particularly before any dental procedure.

Keywords: Hepatitis B, Hepatitis C, Dental clinics, Yemen.

الملخص

مقدمة:

يعد تقييم مدى انتشار فيروسات التهاب الكبد B و C بين مرضى عيادات الأسنان في العاصمة صنعاء أمراً ضرورياً لفهم العبء المحلي لهذه العدوى وتحديد عوامل الخطر المحتملة المرتبطة بانتقالها.

الهدف:

تقييم معدل انتشار فيروس التهاب الكبد B وفيروس التهاب الكبد C وعوامل الخطر المرتبطة بالعدوى بين المرضى الذين يترددون على عيادات كلية طب الأسنان -الجامعة الإماراتية الدولية في مدينة صنعاء, اليمن.

الأساس المنطقي: تسليط الضوء على أهمية الفحص الروتيني قبل أي إجراء للأسنان, خاصة قبل أي إجراء جراحي للفم مثل قلع الأسنان.

المواد والطرق: أجريت هذه الدراسة في عيادات كلية طب الأسنان -الجامعة الإماراتية الدولية في مدينة صنعاء, اليمن. كانت فترة الدراسة الإجمالية ٣ أشهر, بدأت من مارس ٢٠٢٣م وحتى مايو ٢٠٢٣م. تم تسجيل البيانات الشخصية للمرضى, وإجراء اختبار عينات الدم قبل قلع الأسنان للتأكد من الإصابة لوجود HBs Ag ومضاد HCV في قسم طب المختبرات باستخدام تقنية المقايسة المناعية (ICT). تم حساب معدل الانتشار كنسب مئوية, وتم استخدام اختبار مربع كاي لتقييم المتغيرات الفئوية حيث اعتبرت القيمة p البالغة ٠,٠٥ ذات دلالة إحصائية.

النتائج: من بين ٣٨٥ مريضاً, كان اثنان منهم إيجابيين لفيروس التهاب الكبد B وواحد مصاب بفيروس التهاب الكبد الوبائي C بشكل جماعي. ومن بينهم الذكور أكثر إصابة من الإناث. بالإضافة إلى ذلك, كان معدل الانتشار ٢ (٠,٥٢%) لفيروس التهاب الكبد B و ١ (٠,٢٦%) لفيروس التهاب الكبد C. كانت عوامل الخطر للإصابة بفيروس التهاب الكبد الوبائي هي الجنس والحالة السريرية للمرضى بينما كانت الفئة العمرية مصابة بفيروس التهاب الكبد الوبائي.

الاستنتاج: كان معدل انتشار فيروس التهاب الكبد B وفيروس التهاب الكبد C منخفضاً بين المرضى الذين يترددون على عيادات كلية طب الأسنان -الجامعة الإماراتية الدولية. يعد فحص التدخل قبل الأسنان لـ HBs Ag و HCV سياسة معقولة, خاصة قبل أي إجراء في عيادات طب الأسنان.

الكلمات المفتاحية: التهاب الكبد B, التهاب الكبد C, عيادات الأسنان, اليمن.

Introduction:

The prevalence rate of HBV in Yemen was found to be 2.7% among healthy volunteers though it reached 5.1% among blood donors. Such prevalence evidence of past HBV infection was significantly high in Hajjah, Aden and Taiz (14.1 ,%9.8, and 18.8%, respectively) compared to Sana'a (5.4%) (Al-Nabehi et al, 2015).

Hepatitis B, C, and Human Immunodeficiency Virus (HBV, HCV, and HIV) infections were considered an occupational risk for dental professionals and other health care workers. It is a risk that includes the possibility of dental personnel getting HBV or HCV infection from an infected patient and the potential transmission of HBV to susceptible patients from infected dental personnel. (Zhang et al., 2011).

Accordingly, attention has focused on the risks of infection by dental care, either as a result of patient-patient exposures by inadequately sterilized instruments or of dentist-patient exposures by intimate contacts with HBs Ag carriers (Puttaiah et al., 2009).

Hence, we tried to determine the prevalence of HBV and HCV and risk factors among patients who attended to undergo dental procedures in dental clinics at College of Dentistry, Emirates International University. Furthermore, is it necessary to include routine screening of HBs Ag and Anti-HCV in the dental care setting?

Materials and Methods:

- Setting: at Emirates International University Dental Clinics, in Sana'a city, Yemen.
- Study design and patients: The study was conducted as a descriptive cross-sectional study among patients attending Emirates International University Dental Clinics in Sana'a City, Yemen during the year 2023. The required sample size was estimated using a single population Proportion Standard formula Epi Info software, version 6 (Centers for Disease Control and Prevention CDC, USA and as per: $n = (z^2p(1-p)/d^2)$, Where (CDC) (WWW.cdc.gov).

The study includes all patients who accepted to participate in a blood test for HBs Ag and anti-HCV. The patients' demographic profile including age, Gender and other variables were recorded. 5 ml Blood samples were drawn in the routine manner before dental extraction for HBs Ag and anti-HCV at the Laboratory of Medical Department by using by Flow Chromatography Immunoassay of qualitative detection of antigens or antibodies in human serum or plasma for HBV, and HCV. Mf (ABON). (WWW.trinitybiotech.com).

The data analyzed by Social Package of Statistical Science (SPSS) version 26 (LEAD Technologies; Inc. USA). 95% confidence interval. P values <0.05 will be considered statistically significant variables were represented as frequencies and %. In addition, association between variables were assessed by x2 test and fisher exact test.

Results:

Out of 385 patients, there were (%62.6) 241 was males and (%37.4) 144 was females. Moreover, the majority of patients were in age group (%76.9) 40-20 years old, followed by age group <(%15.1) 20 years old, then age group (%7.3) 60-41 years old and age group >(%0.5) 60, with age Mean /SD was 10.9 / 21 ,26. Table 1.

Age group in years	Frequency	%
<20	58	15.1
20-40	296	76.9
41-60	28	7.3
>60	2	0.5
Total	385	100
Mean /SD	26,21 /10.9	
Median	24	
Mode	23	
Range	1 to 70	
Gender	Frequency	%
Male	241	62.6
Female	144	37.4
Total	385	100

Table 1: Demographic Characteristics of the study population

The overall Prevalence of HBV & HCV was 0.78 %, i.e., the Prevalence of HBV was double (0.52 %) than HCV (0.26%) among patients attending Emirates International University Dental Clinics in Sana'a City, Yemen. Table-2

Table-2: Prevalence of HBV and HCV among patients attending Emirates International University dental clinics in Sana'a City, Yemen

Virus Type	Frequency n=385	Prevalence rate
HBs-Ag.	2	0.52 %
HCV -Ab	1	0.26%
Total	3	0.78 %

In addition, there was a significant difference between male and female among patients with HCV but not with HBV patients, where χ^2 & P was 0.020, 0.996, Table-3.

Table-3: Distribution of HBV& HCV patients according to gender

Gender	HBVs -Ag				Total		χ^2	p
	Reactive		Non-reactive		No.	%		
	No.	%	No.	%				
Male	1	0.4	240	99.6	241	62.6	0.56	0.053
Female	1	0.7	143	99.3	144	37.4		
Total	2	0.52	383	99.5	385	100.0		
Gender	HCV-Ab.				Total		χ^2	p
	Reactive		Non-reactive		No.	%		
	No.	%	No.	%				
Male	1	0.4	240	99.6	99.6	241	0.996	0.020
Female	0	0.0	144	100.0	100.0	144		
Total	1	0.26	384	99.7	99.7	385		

According to age group, patients with HBV had aged among 40-20 category, while patients with HCV had aged >60-years category. There was a significant different between age group and HBV but not with HCV infection, where χ^2 & P was 9.21, 0.005 respectively, Table-4.

Table 4: Distribution of HBV & HCV patients according to age group

Age group	HBVs –Ag		Total	χ^2	p
	Reactive	Non-reactive			
<20	0	58	58	9.21	0.005
20-40	2	294	296		
41-60	0	28	28		
>60	0	1	1		
Total=385	2	383	385		

	HCV-Ab.		Total	χ^2	p
	Reactive	Non-reactive			
<20	0	58	58	4.61	0.103
20-40	0	296	296		
41-60	0	28	28		
>60	1	0	1		
Total=385	1	384	385		

Risk factors associated with HBV and HCV infections were shows in Table-5 and Table-6.

Chronic disease, clinical stage of the patient with HCV was the only risk factor with OR= 0.933, $\chi^2_{24.731} = 2$, p = 0.00. No risk factors were detected with both HBV and HCV infections in this study.

Table 5: Risk factors associated with HBV infections.

Risk factors		HBV			OR	χ^2	p
		Reactive	Non-reactive	Total			
Received blood transfusion	Yes	0	28	28	0.00	0.158	0.692
	No	2	355	357			
Marital status Married	Married	0	155	155	0.00	1.355	0.245
	single	2	228	230			
Surgery operation	Yes	1	97	98	2.94 8	0.638	0.425
	No	1	286	287			
Pre-dental procedure	Yes	0	30	30	0.00	0.170	0.680
	No	2	353	355			
HBV vaccine	Yes	1	39	40	8.82 1	3.388	0.066
	No	1	344	345			
Chronic disease	Yes	0	15	15	0.00	0.082	0.776
	No	2	368	370			
Family history of hepatitis	Yes	0	31	31	0.00	0.177	0.675
	No	2	351	352			

Table 6: Risk factors associated with HCV infections.

Risk factors		HCV			OR	χ^2	p
		Reactive	Non-reactive	Total			
Received blood transfusion	Yes	0	28	28	0.00 3	0.079	0.779
	No	1	356	357			
Marital status Married	Married	1	154	155	0.99 4	1.488	0.223
	single	0	230	230			
Surgery operation	Yes	0	98	98	0.00 3	0.342	0.559
	No	1	286	287			
Pre-dental procedure	Yes	0	30	30	0.00 3	0.085	0.771
	No	1	354	355			
Chronic disease	Yes	1	14	15	0.93 3	24.73 1	0.000
	No	0	370	370			
Family history of hepatitis	Yes	0	31	31	0.003	0.088	0.767
	No	1	352	352			

Discussion:

Globally, there are approximately 257 million people infected with HBV and 71 million people infected with HCV. Studies from countries such as Ethiopia, Egypt, Morocco, Turkey and Italy found a relatively high prevalence of HBV and HCV that was attributed to risk factors, one among which was dental treatment. (Al-Amad S. 2018).

Hepatitis B and C are blood borne infections. Dentists including oral surgeons are one of many professionals who are at higher risk of getting these infections from patients (Khan C. et al., 2021).

The objective of this study was to determine prevalence of HCV and HBV in patients reporting for dental treatment. Further, individual seeking dental care may be healthy or suffering from dreadful diseases like Hepatitis B and C or may be carriers that cannot be easily identified. Such patient may act as a source for spreading such infection among dental health care workers and other patients in dental clinics. Hence, another objective of present study was to highlight the potential hazards and risk factors of HBV and HCV to the dental doctors and other associated health workers as well as to patients attending clinics.

The present study found that males' participants (%62.6) 241 was more than females (%37.4) 144. Similar finding found with other studies conducted in Iraq and Pakistan (Merza et al., 2017 & Latoo et al., 2017).

The present study found that the prevalence of HBV and HCV was 0.52 and 0.26, respectively, among patients attending Emirates International University Dental Clinics in Sana'a City, Yemen.

Several similar studies on prevalence of HBV and HCV carried out and had different result without agreement with results of this study. The prevalence of HBV and HCV was 0.52 and 0.26, in the present study and low as compared with study conducted in Iraq and Pakistan. They found that the prevalence of HBV and HCV was (1.99) and (0.00) in Duhok, Kurdistan, Iraq (Merza et al., 2017), while Latoo et al., 2017 in Kashmir Valley, Pakistan found that the prevalence of HBV and HCV was 4.4% and 4.3 % respectively.

In the present study, the prevalence of HBV was more than HCV and this agreed with other study that found the prevalence of HBV 2.7% and HCV 1.5% that conducted at Sandeman Provincial Hospital Quetta, Pakistan (Khan C. et al., 2021). Moreover, this study disagreed with study that found the prevalence of HBV 2.2% and HCV 3.8% that conducted a teaching dental hospital, United Arab Emirates (Al-Amad S. 2018).

The incidence of HBV was equal among male female participants and one male infected with HCV in this study. In addition, there was a significant different between male and female among patients with HCV but not with HBV patients, where X^2 & P was 0.020 ,0.996.

This study-demonstrated predominance of HBV in male sex (0.52 %), which were in support to the finding of other previous reports (Merza et al., 2017).

The higher rate of HBV in men can be explained by a greater exposure to this virus through high-risk jobs and sexual activities. In contrast, other studies have shown lower frequency of HBV among male gender (Qureshi H, et al., 2010).

Regarding to age, the present study found that patients with HBV aged among 40-20 category had high prevalence, while patients with aged >60-year category had HCV. There was a significant different between age group and HBV but not with HCV infection, where X^2 & P was ,9,21 0.005. This result was agreed with other study conducted in Yemen (Al Kasem MA et al., 2018) and Pakistan (Lattoo et al., 2017).

According to risk factors associated with HBV & HCV infections in this study, it was found that chronic disease, clinical stage of the patient with HCV was the only risk factor with OR= 0.933, $\chi^2_{24.731} = 2$, $p = 0.00$. This result was disagreed with other study that found other risk factor associated with viral hepatitis such as history of dental treatment (Lattoo et al., 2017).

This variation in the detection of risk factors perhaps because of small sample size and or few cases had diagnosed in this study.

Conclusion:

The prevalence of HBV and HCV was low among patients attending Emirates International University dental clinics. Risk factors for HCV were gender and clinical status of disease while age group with HBV. Moreover, the study clearly emphasizes the importance of preoperative routine screening for HBV, HCV and other blood borne-infections before any dental procedure.

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Conflict of interest disclosures:

The Authors declare that they have no financial conflict of interest with regard to the content of this report.

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Note:

For more validation of the research paper, if add the date of March when beginning as well as date of May concluding the study, if medically accepted.



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