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Original Research

Oral health status of patients with epilepsy in rural population of Himachal

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***ABSTRACT*:**
Background: Epilepsy is a condition in which patient experiences seizures, where behaviour and mental activity is disturbed. Hence; the present study was undertaken for assessing the oral health status of patients with epilepsy in rural population of Himachal. **Materials & methods:** A total of 100 epilepsy patients were enrolled in the present study. Complete demographic details of all the patients were obtained. A Performa was prepared and separate assessment of clinical and medical details of all the patients was done. After obtaining the informed consent, patients were made to sit in supine position and complete oral examination was carried using mouth mirror, William probe and explorer. OHI-S (Oral hygiene index- simplified) was used for assessing the oral health status. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** It was seen that significantly higher proportion of patients with history of seizure of more than 4 didn't brushed their teeth regularly. Also, incidence of bleeding gums was significantly higher among patients history of seizure of more than 4 per month in comparison to patients which were seizure free. Out of 14 patients with history of seizure of more than 4 per month, bad breath was present in 12 patients while out of 20 patients which were seizure free, 6 patients had bad breath. While analysing statistically, it was seen that bad breath was strongly associated with frequency of seizures. Also, significantly higher proportion of dental caries and gingivitis was seen in patients with higher frequency of seizure per month. **Conclusion:** Epilepsy patients have compromised oral health and hence; regular oral examination is advocated in these group of patients.
Key words: Epilepsy, Rural, Population

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INTRODUCTION

Epilepsy is a condition in which patient experiences seizures, where behaviour and mental activity is disturbed. The patient has no control on muscle tonicity and may transiently lose consciousness. There is abnormal electrical transmission of impulses in the brain which affects neurological activity. Patient tends to have repeated attacks of seizures, however they are reversible. A person is considered to have epilepsy when two or more unprovoked seizures can't be explained by a medical condition such as fever or substance withdrawal.[1-3]

Commonly associated drugs with gingival enlargement belong to two categories, namely, calcium channel blockers and anticonvulsants. According to the literature, gingival growth due to phenytoin has been associated with (i) multiple antiepileptic drugs; (ii) host response; (iii) reduced serum folate levels, and (iv) plaque accumulation. Gingival enlargement causes pseudopockets forming plaque bearing areas, which ultimately enhances the patient's susceptibility to dental caries, inflammation of gingiva and periodontal problems.[4-6] Since oral health contributes to general health, self-esteem, and quality of life, it is significant to address the periodontal health needs of these patients. Few investigations have studied the oral health in persons with epilepsy and showed a high prevalence of poor oral hygiene, periodontal disease and deteriorating of dental status. One study revealed that patients who have poorly controlled epilepsy and experience recurrent seizure have worse oral health in comparison with patients who are better controlled.[3-6] Hence; the present study was

undertaken for assessing the oral health status of patients with epilepsy in rural population of Himachal.

MATERIALS & METHODS

The present study was conducted for assessing the oral health status of patients with epilepsy in rural population of Himachal. A total of 100 epilepsy patients were enrolled in the present study. Complete demographic details of all the patients were obtained. A Performa was prepared and separate assessment of clinical and medical details of all the patients was done. Exclusion criteria for the present study included:

- Diabetic and hypertensive patients,
- Patients with history of any other metabolic disorder,
- Patients who refused to give the informed consent,
- Uncooperative patients

After obtaining the informed consent, patients were made to sit in supine position and complete oral examination was carried using mouth mirror, William probe and explorer. OHI-S (Oral hygiene index- simplified) was used for assessing the oral health status. Clinical assessment of all the patients was carried out. All the subjects were interviewed by trained physicians. Procedure also included interviewing the family members of the subjects who had witnessed the seizures. Results of neuro-imaging findings and EEG findings of all the subjects were also recorded. A self-framed questionnaire was given to all the subjects under the guidance of dental consultants. Questions addressed tooth brushing habits, visits to dental clinics, oral symptoms and diagnosis, number of caries, history of dental injury, tooth loss, and dental restoration experience based on experts' opinions from dentists. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test and student t test were used for evaluation of level of significance.

RESULTS

In the present study, a total of 100 epilepsy patients were analysed. Mean age of the patients was found to be 21.8 years. 58 patients were males while the remaining 21 patients were females. In the present study, as assessed by OHI-S index, good oral hygiene was found to be present in 16 percent of the patients, while fair oral hygiene was found to be present in 24 percent of the patients. 60 percent of the patients had poor oral hygiene. In the present study, in 8 percent of the patients, seizure was of focal type without secondary generalization. In 52 percent of the patients was of focal type with secondary generalization. In the remaining 40 percent of the patients, seizures were of generalized type. In 36 percent of the patients, seizure frequency was between 2 to 4 seizures per month. In 14 percent of the patients, the frequency of seizure was more than 4 seizures per month. In the present study, it was seen that significantly higher proportion of patients with history of seizure of more than 4 didn't brushed their teeth regularly. Also, incidence of bleeding gums was significantly higher among patients history of seizure of more than 4 per month in comparison to patients which were seizure free. Out of 14 patients with history of seizure of more than 4 per month, bad breath was present in 12 patients while out of 20 patients which were seizure free, 6 patients had bad breath. While analysing statistically, it was seen that bad breath was strongly associated with frequency of seizures. Also, significantly higher proportion of dental caries and gingivitis was seen in patients with higher frequency of seizure per month.

Table 1: Demographic data

Parameter		Number
Mean age (years)		21.8
Gender	Males	58
	Females	42

Graph 1: Oral hygiene status as assessed by OHI-S index

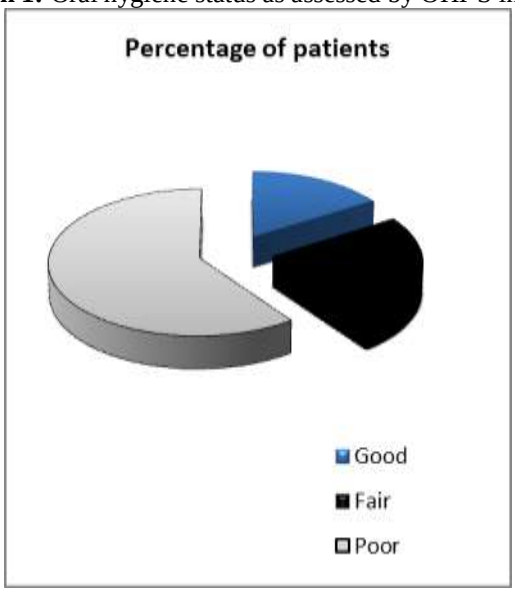

Table 2: Seizure details

Parameter		Number of patients	Percentage of patients
Seizure type	**Focal without secondary generalization**	8	8
	Focal with secondary generalization	52	52
	Generalized	40	40
Seizure frequency	**Seizure free**	20	20
	< 2 seizure/month	30	30
	2 to 4 seizure/month	36	36
	> 4 seizure/month	14	14

Table 3: Questionnaire used in the present study

S No	Questionnaire	Answer options
1	Regular tooth brushing habit	No
		Yes; ___per day
2.	Number of dental clinic visits last year	____ visits
3.	Symptoms; present/absent	Toothache
		Bleeding gums
		Swollen gums
		Gingival hyperplasia
		Bad breath
		Others
4.	Dental caries	Absent
		Present; _____ number
5.	Tooth extraction due to caries	No
		Yes
6.	History of dental injury due to seizure	No
		Yes
7.	History of dental injury due to any other reason	No
		Yes
8.	History of natural tooth loss (other than exfoliation of deciduous dentition)	No
		Yes
9.	History of tooth restoration after dental injury or tooth loss	No
		Yes; Dental fixed crown/ Removable prosthesis/ Others
10.	Have you ever been diagnosed by your dentists	Pulp-Periapical pathologies; Yes/No
		Gingivitis; Yes/No
		Periodontitis; Yes/No
		Others; Yes/No

DISCUSSION

Epilepsy is a common neurological disorder with a prevalence reaching 1%. It is characterized by recurrent episodes of abnormal synchronous discharge of the brain, resulting in various types of seizures. The disease may affect the dental status and oral health of patients in a number of ways: The seizures themselves can cause injuries to the teeth and dental prostheses, certain antiepileptic drugs can cause periodontal disease, the socioeconomic situation of these patients tends to be at the lower end of the scale, and the negative attitude of dentists themselves, affected by myths and prejudices about the disease, may lead to inadequate dental care.[7- 9] Hence; the present study was undertaken for assessing the oral health status of patients with epilepsy in rural population of Himachal.

In the present study, a total of 100 epilepsy patients were analysed. In 36 percent of the patients, seizure frequency was between 2 to 4 seizures per month. In 14 percent of the patients, the frequency of seizure was more than 4 seizures per month. In the present study, it was seen that significantly higher proportion of patients with history of seizure of more than 4 didn't brushed their teeth regularly. Károlyházy K et al performed a dental survey of epilepsy patients to examine their oral health by statistical means and to provide a guide for the dental treatment of these patients. They first set up four "dental" subgroups of epilepsy patients, based on the types of seizures, seizure frequency, and mental state. One hundred one patients underwent a survey concerning their dental, medical, and epilepsy histories, followed by a dental examination. Indexes quantifying oral hygiene, the number and condition of the remaining teeth, periodontium, and the degree of prosthetic treatment were measured. Comparison of the subgroups of epilepsy patients revealed that the most severe findings concern patients who have poorly controlled epilepsy, especially those who have frequent generalized tonic-clonic seizures. The observed difference probably resulted from a combination of factors such as the effect of the seizures themselves, socioeconomic conditions, and the negative attitude of dentists.[9]

In the present study, as assessed by OHI-S index, good oral hygiene was found to be present in 16 percent of the patients, while fair oral hygiene was found to be present in 24 percent of the patients. 60 percent of the patients had poor oral hygiene. Karolyhazy K et al examined the prosthodontic status of patients with epilepsy to determine if the disease has any effect on prosthodontic treatment and to obtain information regarding the level of prosthodontic care. One hundred one epileptic patients were examined, interviewed, and compared with 101 age-matched control (nonepileptic) subjects of the general population. Epileptic patients were recruited at an epilepsy outpatient clinic. The number of missing teeth was significantly higher in the epilepsy group than in the control group (P =.021). The ratio of replaced and missing teeth was lower in the epileptic group (P <.01), indicating inadequate prosthodontic care. There was also a significant difference in the age of the fixed prostheses (P =.0016), being lower in the epilepsy group, and in the material of fixed prostheses (P =.033), metal-ceramic being more common in the control group. More epileptic patients were edentulous than control subjects (8 versus 3) and the average age at the time of examination was younger (48 versus 57 years). Seizure-related injuries were reported by 11% of patients, all belonging to the subgroup of patients with frequent generalized tonic-clonic seizures. Patients with epilepsy have an increased risk for loosing teeth and, furthermore, the prosthodontic status of epilepsy patients was not as optimal as compared with the control group.[10]

In the present study, incidence of bleeding gums was significantly higher among patients history of seizure of more than 4 per month in comparison to patients which were seizure free. Out of 14 patients with history of seizure of more than 4 per month, bad breath was present in 12 patients while out of 20 patients which were seizure free, 6 patients had bad breath. While analysing statistically, it was seen that bad breath was strongly associated with frequency of seizures. Also, significantly higher proportion of dental caries and gingivitis was seen in patients with higher frequency of seizure per month.

Table 4: Oral health status

Questionnaire	Answer options		Seizure free (n=20)	< 2 seizure/month (n=30)	2 to 4 seizure/month (n=36)	> 4 seizure/month (n=14)	p-value
Regular tooth brushing habit	No		4	10	20	8	0.00*
	Yes	Once	10	16	10	4	
		More than once	6	4	6	2	
Number of dental clinic visits last year	Once		12	16	24	8	0.15
	More than once		8	14	12	6	
Symptoms; present/absent	Toothache	Yes	8	16	16	8	0.15
		No	12	14	20	6	
	Bleeding gums	Yes	12	20	26	12	0.00*
		No	14	10	10	2	
	Swollen gums	Yes	8	18	18	10	0.36
		No	12	12	18	8	
	Gingival hyperplasia	Yes	8	16	20	6	0.27
		No	12	14	16	12	
	Bad breath	Yes	6	20	24	5	0.01*
		No	14	10	12	14	
	Others	Yes	10	14	20	10	0.36
		No	10	16	16	8	
Dental caries	Absent		14	20	10	4	0.00*
	Present (Mean number)		6 (1)	16 (2)	20 (2)	10 (3)	
Tooth extraction due to caries	No		16	30	24	10	0.71
	Yes		4	6	6	4	
History of dental injury due to seizure	No		16	32	26	12	0.82
	Yes		4	4	4	2	
History of dental injury due to any other reason	No		18	30	28	10	0.46
	Yes		2	6	4	4	
History of natural tooth loss (other than exfoliation of deciduous dentition)	No		20	32	24	10	0.65
	Yes		0	4	6	4	
History of tooth restoration after dental injury or tooth loss	No		14	20	18	8	0.36
	Yes; Dental fixed crown/ Removable prosthesis/ Others		6	16	12	6	
Have you ever been diagnosed by your dentists	Pulp-Periapical pathologies; Yes/No		6/14	14/22	10/20	4/10	0.48
	Gingivitis; Yes/No		14/6	28/8	22/8	10/4	0.00*
	Periodontitis; Yes/No		10/10	20/16	16/14	8/6	0.12
	Others; Yes/No		8/12	14/22	12/18	6/8	0.84

***: Significant**

In another study conducted by Károlyházy K et al, authors examined the oral health status of epilepsy patients. The epilepsy group consisted wholly of patients participating in an epidemiologic survey performed five years previously. The gender- and age-matched control (non-epilepsy) group consisted partly of subjects recovered from the previous study, and partly of new subjects. The epileptic condition of the patients showed significant improvement upon follow-up, in contrast to a significant deterioration in their oral health as compared to the control group. Concerning oral health, dental indices describing oral hygiene and periodontal condition showed the most pronounced decline.[11] The study done by Lundström *et al*. demonstrated that children and adolescents who took phenytoin develop larger number of gingival units with increase in depth of probing than individuals given carbamazepine during comparable period.[12]

CONCLUSION

From the above results, the authors concluded that epilepsy patients have compromised oral health and hence; regular oral examination is advocated in these group of patients. It is imperative that dentists should be well aware of the different types of epilepsy and adverse effects associated with different anti-epileptic drugs.

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