INTRODUCTION

Denture induced fibrous hyperplasia (DIFH) is an oral pathologic condition that appears in the mouth as an overgrowth of fibrous connective tissue. It is also referred to one of the most common tissue reaction to a chronically ill-fitting denture. It is not malignant condition but interferes with denture placement.

DIFH is also known as Granuloma fissuratum, inflammatory fibrous hyperplasia and denture epulis, and it is more prevalent in older subjects than in younger individuals because the oral mucosa becomes defenseless to local irritants as individuals age.

The lesion occurs around the borders or flanges of ill-fitting complete or removable partial dentures, and results from the constant trauma and inflammation caused by the pressure from overextended denture borders and tipping forces resulting from imbalanced occlusion.

Treatment consists of topical application of medicaments like antifungal agents, removal of the den-
tured for varying lengths of time, fabrication of new dentures and surgical removal of the lesion.\textsuperscript{7,8}

There are few studies regarding the prevalence of denture induced fibrous hyperplasia in Jordan.\textsuperscript{9} Additionally there is no recent data concerning the frequency of denture-induced fibrous hyperplasia in a defined risk group, such as denture wearers. The purpose of this study was to determine the prevalence of denture–induced hyperplasia in a sample of Jordanian people, and to investigate the correlation between it and the age, gender, location and the duration of wearing the denture.

\section*{METHODOLOGY}

Prior to commencing the study, ethical approval by the Human Research Ethics Committee at the Royal Medical Services was obtained. All subjects were informed about the aims and methods of this study, and they provided written consent to participate. In this cross-sectional study, a total of 450 Royal Medical Services dental clinics outpatients (F/M: 260/190, age range: 34-78 years) were examined within a period of six months from January to June 2013. Present study was done on 36 patients who were having denture-induced fibrous hyperplasia out of 450 complete denture wearers attending prostodontic clinic in Marka Medical Center with different complaints. 27 out of 36 patients were females (80.6%) and 9 were males (19.4%). The age range was divided into two age groups; first ranging in age from 34-60 years and the second from 61-78 years.

The female age ranged between 34-74 (mean age 54.84), while the male age range was between 36-78 (mean age 57).

A data collection was done containing the information regarding age, denture wearing period, gender, night wear and denture cleaning habits.

Intra oral examination was done by a prosthodontist and a periodontist to examine the presence and location of the lesions based on the clinical picture, with plain mouth mirrors under artificial light.

The data collected was analyzed using SPSS version 16.0 (SSPS® Inc., Chicago, IL, USA). Chi-square was applied to compare the study variables and the denture-induced fibrous hyperplasia. P value < 0.05 was considered statistically significant.

\section*{RESULTS}

A total of 450 dental patients consisting of 260 (47\%) females and 190 (53\%) males were included in the study. Denture-induced fibrous hyperplasia were found in 36 patients (8\%) 27 females and 9 males.

Table 1 shows gender related distribution.

Distribution of DIFH according to age is shown in Table 2. There were not any statistically significant differences within the age groups in DIFH (p>0.05).

The relationship between the DIFH and denture wearing period is presented in Table 3. 66.6\% of the patients with DIFH had been wearing their dentures for more than 8 years. When the denture period increased, the incidences of the lesions were also increased. There was statistically significant difference between denture wearing period and DIFH (p>0.05).

Table 4 shows the location of the DIFH. There was a statistically significant difference in the distribution of the lesions within the jaws (p<0.05). There were more DIFH in the mandible (61.6\%) than in maxilla (38.8\%). Most DIFH lesions were located in the anterior area of the jaws (80.6\%) than in the posterior area (19.4\%).

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{DIFH (n=36)} & \textbf{Gender} & \textbf{N} & \textbf{\%} & \textbf{P value} \\
\hline
Female & 27 & 75 & 0.031* \\
Male & 9 & 25 & \\
Total & 36 & 100 & \\
\hline
\end{tabular}
\caption{GENDERS RELATED DISTRIBUTION}
\end{table}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{DIFH (n=36)} & \textbf{Age group} & \textbf{N} & \textbf{\%} & \textbf{P value} \\
\hline
34-60 yrs old & 24 & 66.6 & 0.118* \\
61-78 yrs old & 12 & 33.3 & \\
Total (n) & 36 & 100 & \\
\hline
\end{tabular}
\caption{DISTRIBUTION ACCORDING TO AGE}
\end{table}

*P <0.05 Significant, DIFH = denture-induced fibrous hyperplasia.
DISCUSSION

Dweiri et al. (2012) reported the prevalence of denture fissuratum was 20.2% (72 patients). Williams et al. reported that it is the most common lesion in the oral cavity. Buchner et al reported that 18% of hyperplastic lesions of the gingiva were denture fissuratum. Pinto-Coelho and Zucoloto reported in a prospective analysis of the oral histopathological files in a dental school that 14.5% of denture-wearers had denture fissuratum. Several studies contained data on the prevalence of DIFH showed a wide range of prevalence. For instance Nordenram and Ladtin reported an incident of 37.7%. While Bataineh et al reported 6.12%. In the current study we found that the prevalence was 8%.

Dweiri et al. (2012) found that the prevalence of DIFH among females (23.1%) was only slightly more than among males (18.6%). This finding was in accordance with Bataineh et al. who reported that the males and females were equally affected. However, the finding of their study was contrary to this study that showed a higher prevalence in females than males as has been reported in studies, done by Coelho et al. on 305 patients. He reported that DIFH was observed in 42 females and 14 males, a study done by Jainkittivong et al. on 500 patients, 10 patients had DIFH and 6 of them were female. Firoozmand et al. reported in their study that 78% of DIFH cases occurred in females. So the result of the current study is consistent with these previous studies.

Denture-induced fibrous hyperplasia occurs in females more than males for many reasons, females live longer than males, they seek dental treatment more than males, and may be due to hormonal alterations during menopause.

This study showed that the mandible (61.1%) was more affected than the maxilla (38.9%). Also Dweiri et al. showed that the mandible (75%) was more affected than the maxilla (25%). While Buchner et al. and Bataineh et al studies reported that the maxilla and the mandible were equally affected. Similarly in Turkish study, Canger et al. found that the majority of DIFH lesions were seen in the mandible (53.5%) compared to the maxilla (46.5%). Contrary to this study regarding denture related oral mucosal lesions in a Brazilian dental school it was found that the majority of DFIH cases occurred in the maxilla. These results are inconsistent with the present study.

The most affected site in the present study was the anterior area (80.6%). Canger et al. support this information, (77.5%) of DIFH were in the anterior region. Dweiri et al. found that the most affected site in his study was the lower labial sulcus. This result differed with the studies done by Nodenram and Landt (1969) and Cutright who reported that the anterior maxilla is more affected than other areas of the mouth.

Although DIFH can be found in any age group, in this study majority of the patients were in the age range of 34-60 years, Dweiri et al study found that it occurred mainly in the fifth and sixth decades. Coelho et al. Buchner et al and Bataineh et al. reported that DF occurred in the fourth, fifth, and sixth decade.

In the current study, 66.6% of DIFH group had been wearing dentures the whole day. The average denture wearing of that group was more than 8 years. As the patient’s age increased, the length of denture

<table>
<thead>
<tr>
<th>TABLE 3: FREQUENCY RELATED TO DENTURE-WEARING PERIOD</th>
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<tbody>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>0-8yrs</td>
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<tr>
<td>&lt; 8yrs</td>
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<tr>
<td>Total (n)</td>
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</tbody>
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*P < 0.05 Significant, DIFH = denture-induced fibrous hyperplasia

<table>
<thead>
<tr>
<th>TABLE 4: LOCALIZATION OF THE LESIONS</th>
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<tbody>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>Upper jaw</td>
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<tr>
<td>Lower jaw</td>
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<tr>
<td>Anterior area</td>
</tr>
<tr>
<td>Posterior area</td>
</tr>
<tr>
<td>Palatal area</td>
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<tr>
<td>Total</td>
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</tbody>
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use also increased. With long-term use of traumatic
dentures, DIFH is more frequent.\textsuperscript{15}

Dundar and Kal reported that the incidence was
higher in individuals who had used their dentures for
more than 20 years.\textsuperscript{19}

**CONCLUSION**

This study found that denture induced fibrous
hyperplasia is not a common manifestation of complete
denture wearers in middle Jordan. However, there
was statistical significant correlation between DIFH
and patients related factors such as gender, location of
lesions, and the denture-wearing period. To avoid
denture induced hyperplasia, dentures must be exam-
ined more often after their construction and delivery.
The patients must be informed about cleansing and
disinfection measures, and warned not to wear them
a whole day at a time.

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