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The Prognostic Value of Tumor Marker Ca15-3 in Breast Cancer
M.H. Khouja, Nora Melkonian*
Dept. of Pathology, Faculty of Medicine, University of Aleppo

Abstract

Breast cancer is the commonest cancer among Syrian females and the leading cause of morbidity.

The present study was carried out to evaluate the clinical significance of tumor marker Ca15-3 in the serum of (39) women.

Material and Methods: prospective Ca15-3 concentrations were assayed by ELISA method (Enzyme Linked Immunosorbint Assay) in serum of (39) women who visited Aleppo University Hospital during the period between February 2008 until June 2009. 10 were healthy controls, and (29) were diagnosed as having breast cancer. From these patients we took 47 analyses. Breast cancer analyses were divided into 4 groups:
Group I: Preoperative group (13 analyses); Group II: postoperative group (21 analyses) just prior to having chemotherapy; Group III: Recurrence disease group (7 analyses); Group IV: Post therapeutic group (6 analyses): Blood samples were obtained within a period of (1-4) months after having the course of therapy.

Results: Serum levels of Ca15-3 were higher in metastatic breast cancer patients than in those with primary disease (80% and 26.3% respectively). The level was significantly elevated in advanced stages: (0%, 20%, 42.9% and 60%) above the cut off value (30 u/ml) for stages I, II, III and IV respectively. A significant decline in the marker after removal of the cancer bulk was observed (38.5% and 28.5% for pre-versus postoperative cases respectively). The value of Ca15-3 in recurrent breast cancer was more in the distant metastasis than in local regional one (100% and 50% respectively). No significant correlation was demonstrated between serum Ca15-3 level and the age, grade and type of the tumor. On the other hand, a significant correlation was recorded between the size of the tumor and lymph node status in primary breast cancer but not in the metastatic state.

Conclusion: Increasing in the level of Ca15-3 antigen in breast cancer is more than that in the normal woman (cut off value 30 u/ml). Its measurement could not be regarded as independent marker in the diagnosis and screening of the breast cancer but it may reflect the

Received 25/11/2009
Accepted 6/1/2010
Prognosis of the tumor. It could be helpful in detecting the recurrence state before it is clinically apparent, therefore it is valuable in the following up of the breast cancer patient and it is better to be used with other tumor markers. A significant correlation was found between Ca15-3 and the tumor size and lymph node status but not with the age in primary disease.

**Introduction**

**Disease of the Breast and Mammary Carcinoma**

Breast cancer is the most common malignant tumor and the leading cause of carcinoma death in women with more than 1.000.000 cases occurring worldwide annually [1].

Breast cancer has a tendency to metastasize early, predominantly to lymph nodes, later to bone, liver, lung and pleura. Deposits are also commonly encountered in abdominal lymph nodes and peritoneal cavity, adrenal, ovaries, skin, contra lateral breast and central nervous system. Therefore, once the diagnosis of breast cancer is confirmed, determined effort should be made to establish the likely prognosis, and in particular the presence of tumor dissemination. The available methods, which have been useful as prognostic value, include nodal staging, biochemical markers, and radiological scanning techniques.

**Aim of Study**

The main purpose of the study was to evaluate the significance or usefulness of Ca15-3 biomarker measurements in groups of patients with breast carcinoma according to the (staging, grading and pathological type) and also in primary and Metastatic breast cancer.

**Review of Literature**

**Cancer Antigen 15-3 (Ca15-3) in Breast Cancer**

Ca15-3 (also known as MUC1) is a most widely used serum marker in breast cancer. MUC1 is a large Transmembrane glycoprotein of a molecular weight 290kd, which is frequently over expressed and aberrantly glycosylated in the cancer cells. It appears to play a role in cell adhesion and the high level present in the cancer may be causally involved in metastasis [2].

The MUC1 mucin is recreated by normal secretory epithelium, aberrantly over expressed by tumor, and shed into the circulation especially in patients with breast cancer [3].

During malignant transformation, aberrant glycosylation may result in exposure of hidden epitopes on the core polypeptide back
bone of Ca15-3 and these epitopes can be detected by monoclonal antibodies and may be used quantitatively by calculating the amount of this antigen in the serum.

They are of a limited value in the diagnosis of the early stage of breast cancer because of their sensitivity. This is because this antigen which is produced by the epithelial cells can not access the connective tissue stroma until wide spread invasion and metastasis occur.

**Chemical Structure**

The Ca15-3 assay measures the breast-associated antigen MUC1 (also known as episialin, poly morphic epithelial mucin or epithelial membrane antigen). MUC1 is a large transmembrane glycoprotein, containing three main domains, i.e. a large extra cellular region, a membrane spanning sequence and cytoplasm domain [4].

The extra cellular domain comprising 1000 to 2200 amino acid residues contains an N-terminal signal peptide and a large region of 20 amino acids. The number of nearly identical repeats can vary from 25 to 125 due to genetic polymorphism. The repeat regions are rich in Ser, Thr and Pro residues and are extensively O-glycosylated, i.e., they bound between glactosamine and the oxygen atom of Ser and Thr residues [4].

The repeat amino acid sequences can also undergo N- glycosylation (N-acety glucosamine joined to nitrogen atom of asparagines residue). The presence of large amount of carbohydrate attach to the extra cellular region of MUC1 increases its rigidity, giving rise to a large flexible rod-like structure, that can extend > 200 nm from the apical cell surface into the lumen. MUC1 protein can thus extend further out from the cell than the other membrane associated protein [2].

**Physiological and Pathophysiological Role**

Although the physiological role of MUC1 is unknown, recent data suggested that it plays a role in cell adhesion, i.e., in causing decreased cell-cell and cell-extra cellular matrix (ECM) interaction. Because of its extended rod-like structure and negative charge, cells expressing high levels may repel each other [4]. In addition, MUC1 has been shown to override Catherine E-Mediafed cell-cell adhesion. If MUC1 acts as an anti-adhesive molecule, increased expression in primary tumors could be expected to facilitate detachment of malignant cells, both from adjacent normal cells and extra cellular matrix in the primary cancer. Thus, MUC1 might play a role in the initiation of cancer inversion and metastasis [2].
Table of Ca15-3 value in patients with mammary and non
mammary malignancy [5]

<table>
<thead>
<tr>
<th>Group</th>
<th>% of patients with Ca15-3 &gt; 40 U/ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy subject</td>
<td>2.2%</td>
</tr>
<tr>
<td>Non mammary cancer</td>
<td>17.6%</td>
</tr>
<tr>
<td>Hepatic</td>
<td>30%</td>
</tr>
<tr>
<td>Digestive</td>
<td>15%</td>
</tr>
<tr>
<td>Respiratory</td>
<td>26%</td>
</tr>
<tr>
<td>Ovarian</td>
<td>46%</td>
</tr>
<tr>
<td>Gynecological (except ovarian)</td>
<td>6.2%</td>
</tr>
<tr>
<td>Urinary</td>
<td>0%</td>
</tr>
<tr>
<td>Male genitalia</td>
<td>9%</td>
</tr>
<tr>
<td>Hematological</td>
<td>3.8%</td>
</tr>
<tr>
<td>Non liver metastasis</td>
<td>39%</td>
</tr>
<tr>
<td>Liver involvement</td>
<td>32%</td>
</tr>
<tr>
<td>Metastatic breast cancer</td>
<td>75%</td>
</tr>
</tbody>
</table>

Ca15-3 is detected by mucin monoclonal antibody (MAb) DF3 produced against a membrane enriched extract for human breast cancer metastasis to liver. Another monoclonal antibody, 115 D8, was developed against human milk fat globule membrane. The circulating DF3 reactive antigen is a heterogeneous molecule with a molecular mass of 30 to 45 KD. The gene of this molecule has been located on chromosome 19, cDNA cloning. It elevated in 72% in women in metastasis breast cancer.

This antigen has been found useful in monitoring the course of advanced breast cancer and in the post surgical follow up of patients with breast cancer. The elevation of Ca15-3 concentration could be found few months before clinical signs appearance.

Materials and Methods
Clinical Observation
This study is a case control study.
- Blood samples were obtained form (10) apparently healthy, populations of women with an age range of (25-70 years).
- Blood samples were also collected from 29 patients with malignant breast lesions of an age range of (30-70 years). These patients visited Aleppo University Hospital from February 2008 until June 2009.

For all cases with malignant diseases, complete information was reported regarding clinical conditions and patients’ history. We have had from 29 patients 47 analyses.

According to the patients’ clinical conditions, breast cancer patients’ analyses were categorized into the following groups:
A-Preoperative Group (13 Analyses)

It included patients who visited Aleppo University Hospital with an age range from (30-70 years), asking advice for palpable breast lumps. Those were diagnosed as having carcinoma. Blood samples were obtained from these cases.

On follow up, all these patients were later on subjected to lumpectomy and/or mastectomy (simple or radical) depending on the extent of the malignancy and lymph nodes involvement.

According to the histopathological result, grading and staging were recorded according to TNM system [6]. Pathological types were reported according to the WHO classification [7].

B. Post-Operative Group (21 Analyses)

Those included breast patients for subsequent chemotherapy and/or radiotherapy. Blood samples were obtained just before antineoplastic therapy started. Full information from these patients was reported.

C. Cancer Recurrence Group (7 Analyses)

It includes five patients with metastatic disease (liver, lung, bone) and two patients with loco-regional recurrence.

Those patients had already finished the course of the primary treatment. Blood samples were obtained from these groups when the cancer recurrence was diagnosed.

D. Post-Therapeutic Group (6 Analyses)

Blood samples were obtained within a period of (1-4) months after having the course of therapy.

Specificity, Sensitivity and Cut-Off Value [8]

Specificity: a term used to describe the probability that a laboratory test will be negative (that is within normal range) in the absence of diseases; defined as true negative and false positive.

\[
\text{Specificity} = \frac{\text{No. of true negative}}{\text{No. of true negative} + \text{No. of false positive}}
\]

Sensitivity: a term used to describe the probability that a laboratory test will be positive (that it is greater than upper limit of normal in the presence of disease); defined as true positive divided by addition of true positive and false negative.

\[
\text{Sensitivity} = \frac{\text{No. of true positive}}{\text{No. of true positive} + \text{No. of false negative}}
\]

Cut-Off Value: Concentration which allows to differentiate patients from normal groups (healthy persons). In general:
Cut-off value = mean + 2SD or 95% percentage
Statistical analysis was performed using the SPSS 15.0 software package (SPSS, Chicago, IL) and a level of P<0.005 was Chosen.

Results

Table (1): Histological types of breast carcinoma.

<table>
<thead>
<tr>
<th>Histological type</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Infiltrative ductal carcinoma</td>
<td>26</td>
<td>89.7%</td>
</tr>
<tr>
<td>- Infiltrative lobular carcinoma</td>
<td>3</td>
<td>10.3%</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table (2): Grading of breast carcinoma.

<table>
<thead>
<tr>
<th>Grading</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good differentiation</td>
<td>3</td>
</tr>
<tr>
<td>Moderate differentiation</td>
<td>17</td>
</tr>
<tr>
<td>Poor differentiation</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
</tr>
</tbody>
</table>

Table (3): Distribution of primary and metastatic breast cancer patients.

<table>
<thead>
<tr>
<th>Breast cancer</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary non metastatic</td>
<td>19</td>
<td>65.5%</td>
</tr>
<tr>
<td>Metastatic</td>
<td>10</td>
<td>34.5%</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table (4): Frequency of elevated serum Ca15-3 in malignant breast lesion and control.

<table>
<thead>
<tr>
<th>Clinical categories</th>
<th>Total No. of analyses</th>
<th>Elevated Ca15-3 level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Analyses</td>
</tr>
<tr>
<td>Control group</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Breast cancer analysis group</td>
<td>47</td>
<td>18</td>
</tr>
<tr>
<td>- Preoperative</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>- Postoperative</td>
<td>21</td>
<td>6</td>
</tr>
<tr>
<td>- Post-therapeutic</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>- Recurrence</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Recurrence</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Metastatic</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Local regional</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

* Elevated Ca15-3 level: is defined as serum level of Ca15-3 exceeding the cutoff value (30 unit/ml).

Table (5): Serum level of Ca15-3 in control and breast cancer.

<table>
<thead>
<tr>
<th>Clinical categories of the study population</th>
<th>No. of Analyses</th>
<th>Serum Ca15-3 level u/ml (Mean ± SD)</th>
<th>P.value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy (control)</td>
<td>10</td>
<td>18 ± 6</td>
<td></td>
</tr>
<tr>
<td>Breast Cancer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Preoperative</td>
<td>13</td>
<td>41 ± 31.3</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>- Postoperative</td>
<td>21</td>
<td>31.1 ± 18.1</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>- Post-therapeutic</td>
<td>6</td>
<td>23.9 ± 8.5</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>- Recurrence cancer</td>
<td></td>
<td>62 ± 44.5</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>
P value for the difference between patients group and healthy group represented as \( P > 0.005 \) is considered as significant.

Table (6): Correlation of elevated Ca15-3 level with TNM staging in breast cancer.

<table>
<thead>
<tr>
<th>Disease stage</th>
<th>No. of patients</th>
<th>Mean ± SD</th>
<th>Elevated Ca15-3 level (&gt;30 u/ml)</th>
<th>P. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>19.5 ± 4.9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>10</td>
<td>28.5 ± 16.7</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>III</td>
<td>7</td>
<td>29.9 ± 14.8</td>
<td>3</td>
<td>42.9%</td>
</tr>
<tr>
<td>IV</td>
<td>5</td>
<td>50.6 ± 29.3</td>
<td>3</td>
<td>60%</td>
</tr>
</tbody>
</table>

No. Number, SD = Standard deviation, IDC = Infiltrative ductal carcinoma, ILC = Infiltrative Lobular carcinoma, NS = Not significant.

Table (7): Histological type of patients with breast cancer in correlation with elevated C15-3 level.

<table>
<thead>
<tr>
<th>Histological type</th>
<th>No. of patients diagnosed</th>
<th>Mean ± SD</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>- IDC</td>
<td>26</td>
<td>37 ± 24</td>
<td>NS</td>
</tr>
<tr>
<td>- ILC</td>
<td>3</td>
<td>41 ± 16</td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No. number, SD = Standard deviation, NS = not significant.

Table (8): Grading of breast carcinoma in correlation with elevated Ca15-3 level.

<table>
<thead>
<tr>
<th>Grading</th>
<th>No.</th>
<th>Mean ± SD</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well differentiation</td>
<td>3</td>
<td>25 ± 6.8</td>
<td>NS</td>
</tr>
<tr>
<td>Moderate differentiation</td>
<td>17</td>
<td>35 ± 16</td>
<td>NS</td>
</tr>
<tr>
<td>Poor differentiation</td>
<td>6</td>
<td>41 ± 32</td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No. = number, SD = Standard deviation, NS = not significant.

Table (9): Correlation of elevated Ca15-3 level in primary and metastatic breast cancer with control.

<table>
<thead>
<tr>
<th>Clinical categories</th>
<th>No</th>
<th>No. of patients with elevated Ca15-3 (&gt;30 u/ml)</th>
<th>Mean ± SD</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>10</td>
<td>0 0%</td>
<td>18 ± 6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Breast cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary non metastatic</td>
<td>19</td>
<td>5 26.3%</td>
<td>28.5 ± 15.8</td>
<td></td>
</tr>
<tr>
<td>With metastasis</td>
<td>10</td>
<td>8 80%</td>
<td>56 ± 36.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table (10): Correlation between Ca15-3 levels with other clinical parameters in 29 patients with primary and metastatic breast cancer.

<table>
<thead>
<tr>
<th>Breast Cancer categories</th>
<th>No</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Age</td>
</tr>
<tr>
<td>Primary breast cancer</td>
<td>19</td>
<td>NS</td>
</tr>
<tr>
<td>Metastatic breast cancer</td>
<td>10</td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

NS: not significant,  
LN no*: lymph node number

DISCUSSION

Normal Control

Low levels of CA15-3 with mean ± SD (18 ± 6) were observed in ten normal women. A cut off value was calculated to be equal to: mean ± 2 SD which equals to (30 u/ml).

Breast Cancer

Tables (4), (5) display that the serum values of Ca15-3 in breast cancer patients were above the cut off value in 38.3% of the patients. These results confirmed analogous findings obtained by [9] observed elevated serum Ca15-3 levels in 31% of these patients. Regarding pre-operative and post-operative breast cancer groups, 38.5% and 28.5% of the patients respectively had elevated levels. There is a decline in abnormal levels and in the means values in the latter group.

These results agree with reported results [10] which found a more declining level in the post operative value than pre-operative. This may obviously be attributed to removal of the tumor bulk which is used to secret this marker.

By comparing the distant metastasis in recurrence disease (100%) and local regional recurrence (50%), the mean value in the metastatic group is again higher than that in the local regional recurrence disease.

Daniel [11] observed that in local regional recurrence the value of Ca15-3 level was less than that in distant metastasis (23% and 62.5% respectively). Gunczlen [12] observed that higher Ca15-3 levels were found in haematogenous spread than that in local recurrence cases. VAN Dalen Dalesandro [8, 13] recorded similar findings. Thus, these results agree with ours. The minor difference in values may be attributable to the number of the sites involved and the organs where the metastasis occurs. The values of the Ca15-3 were directly proportional to the number and the type of the organ involved [14]. Therefore one can conclude that the Ca15-3 level may be a good indicator in advanced breast cancer (especially in recurrent cancer). It is also clear that the recurrent disease level of Ca15-3 (85.7% above
the cut off value) is more than that in the post-therapeutic group (16.6%), i.e., those who had already finished the primary treatment and appeared clinically and radiologically in disease free-state. That also confirms previous reports which show that Ca15-3 antigen measurement is an indicator for detection of the recurrence of the disease especially in those with distant metastasis.

Table (6) showed that there is an increase in the mean ± SD level of Ca15-3 as the stage of the disease advanced from stage I to IV, with a percentage above the cut off value equivalent to (0%, 20%, 42.9%, 60% respectively) in stages I, II, III, IV. This was statically significant (P < 0.05).

Other authors also recorded good correlation between Ca15-3 levels and advanced stages of the diseases [14].

Table (9) demonstrated that 26.3% of patients with primary breast cancer had increased level of Ca15-3 compared to 80% in the metastatic state [14] and it was observed that 19.5% of patients with primary disease had an elevated value. This minor variation in the results may be due to different criteria of the selection of the patients. The value of the Ca15-3 is highly associated with the number of the lymph node involvement, prelymphatic permeation and blood vessels invasion [15].

Many patients as well may have occult or micro metastasis at the time of the blood sample collection, and the patient may be falsely classified as having a primary (rather than advanced) breast cancer. Therefore, optimum perfect investigation is very important in this respect. (i.e., radiological and histopathological).

There was a direct correlation between the number of the lymph nodes involved and the tumor size with concentration of the Ca15-3 antigen in the serum of the patient with primary breast cancer (P < 0.03, P < 0.05 respectively) (table 10). This may be related obviously to more shedding of the antigen as the number of the lymph nodes increases and also as the tumor size enlarges. Similar finding were observed by [14].

Also in in table [10], in metastatic breast cancer, there was no significant correlation between the level of Ca15-3 in the serum and the age of the patients, tumor size or the number of the lymph nodes involved. This could be due to the fact that in the distant metastases there are other sources of the antigen depending on the type and the nature of the site involved by the disease. Oversheding of antigen may be not significant, resulting in different levels of Ca15-3 in the serum.
[16] agrees that in metastatic diseases there was no correlation between the tumor marker and the tumor size, or with histological grade. However, others found [14, 17] significant correlation between the level of Ca15-3 and grade of the disease. This was not demonstrated in our study probably due to the small number of cases involved in evaluation.

**Conclusion and Recommendation**

1- The levels of serum Ca15-3 are more increased in breast cancer patients (than those in the healthy group (Control group).

2- Serum Ca15-3 levels are increased with the advance in the stage of the disease. They are significantly increased in stages III and IV.

3- The less significant increase in the levels in early stages indicates that we can not use Ca15-3 measurement for screening and early detection of breast cancer.

4- There is a positive correlation between the increase in tumor size and the nodal status with the increase of Ca15-3 level in primary breast cancer.

5- Ca15-3 may be of great help in the follow up of breast cancer patients and predicting recurrence.

6- It is insufficient for monitoring the treatment response alone, but the increasing in the Ca15-3 serum levels may be used to indicate treatment failure.

7- A decline in the values of Ca15-3 is demonstrated after surgery.

8- The low sensitivity of the assay does not allow the use of Ca15-3 measurement as a sole indicator marker in the diagnosis of the breast cancer.

9- Apparently, disease free patients with proven elevated serum Ca15-3 values may have occult metastasis.

10- No correlation was found between the Ca15-3 level and the age of the patients.

11- It could be used as a better prognostic marker as the duration of follow up increased.

12- Better prognostication could be presented when using Ca15-3 with other markers including CEA, Ca549, MCA.

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The Psychological Impact of Tooth Loss Among the Adults and Its Relation to Tooth Type, Patient’s Age and Gender

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Abstract

Objective: The study aims to shed some light on the psychological impact of tooth loss among a sample of adults and its relation to tooth position in the dentition, patient's age and gender.

Methods: 260 subjects who had experienced tooth loss were interviewed and presented with 14 different scenarios of mouths with missing teeth. Each written description was accompanied with a verbal explanation and digital pictures of mouth models. Participants were asked to indicate on a rating scale how they would value the health of their mouth if they lost the tooth described and the resulting space was left unrestored. The rating scale is a utility measurement; it was originated in psychometrics and it is the most commonly used method for measuring health-state preferences.

Results: With a utility value of 0.0 representing the worst possible health state for a mouth and 1.0 representing the best, the mouth with the upper central incisor missing attracted the lowest utility value (utility = 0.13), the one with a missing upper second molar and a missing lower second molar attracted the highest utility values (utility = 0.44, 0.42), respectively. The results indicated that mouths with missing anterior teeth attracted statistically significantly lower utility values when compared to mouths with missing premolar and molar teeth ($p<0.05$). The perceived utility of the mouth was statistically significantly lower for women than for men ($p < 0.05$). Furthermore, missing teeth had a greater effect on mouth utility in the younger participants, but the difference did not reach statistical significance in all tooth loss scenarios.

Conclusion: Loss of a front tooth was perceived by the study sample as more psychologically impactful than loss of a posterior tooth. Age

Key words: psychological impact, tooth loss, adults, tooth position, age, gender.

Received 30/12/2009
Accepted 9/2/2010
and gender both have a significant influence on how the dentition is valued. Further studies are required to examine whether patient’s oral health status, social class, level of education and economic situation affect how tooth loss is viewed.

Introduction

Traditionally, medical and dental research was directed towards investigating the impact of disease on the general health of the population. However, in recent years there has been more emphasis on understating the impact of disease on the psychosocial health of the patients. There is an increasing acceptance that ‘health’ and ‘oral health’ are related to the functional, psychological, social, and aesthetic well being of the person, rather than being attributable to a particular pathological state of the body or body part [1].

Clinical indices, although objective, give no indication of the impact of disease on the wellbeing of the society which is receiving, and paying for, services. Equally, they do not measure the extent to which treatments for disease benefit the population. It is also accepted that health care professionals value the outcome of treatment in a very different way to the public and their patients [2, 3]. Therefore, if solely health professionals’ views are taken into account when services are planned and commissioned, the possibility arises that the services will not actually deal with the health impacts, worries and concerns felt within the community served. It is therefore essential that patient-centered, subjective measures of health are used, as well as clinical measurements, when needs are assessed to inform service delivery.

This study focuses on the end-point of both of the common oral diseases, caries and periodontal disease i.e. tooth loss. The study seeks to shed some light on adults’ perception of tooth loss by using a utility measurement.

The term utility refers to a numerical indication of the desirability or preference that an individual (or society) has for a given health state [4]. Disutility implies the opposite i.e. it is a measure of the distress caused by a given health state. A utility measurement is therefore a numerical representation of a patient’s preference for a given health state. In this case, the utility score is the value placed on a mouth, and the study examines how this numerical score alters as the position of missing tooth varies. Utility values always range from 0 (the least preferred health state) to 1.0 (the most preferred health state) [5]. The utility score is a representation of the ‘value’ placed on a
particular health state, or in this case, the value assigned by study participants to a mouth with missing teeth.

How a mouth is valued by an individual will potentially be affected by tooth position or tooth type. Also, it may be affected by gender, and perhaps by age, given differences in oral health and oral health expectations [6].

This study therefore aims to investigate the psychological impact of tooth loss among the adults and its relation to tooth position in the mouth, patient’s age and gender. A utility measurement will be used as a tool of evaluation.

**Materials and Methods**

The target population for this investigation was subjects who had some experience with tooth loss, excluding third molar teeth. However, completely edentulous subjects were excluded. Participants were recruited from the subjects attending Aleppo Faculty of Dentistry - University of Aleppo, Syria, the patients attending the Integrated Restorative Care units at the University Dental Hospital of Manchester in the UK, and the out patient clinic of Kerman Dental School, Kerman, Iran.

Persons who agreed to take part were presented with written descriptions of 14 different scenarios of mouths with missing teeth. Tooth loss scenarios comprised all tooth types (incisors, premolars, molars, maxillary and mandibular). Each written description was accompanied by a verbal explanation, and digital pictures of mouth models with missing teeth. A face mirror was also used to clearly illustrate to each participant the position of the supposedly lost tooth in his/her own mouth. A mouth model illustrating of the lost tooth was available on the desk as an aid to understanding.

In order to measure the utility placed upon each mouth, (tooth loss scenario) participants were asked to indicate on a standardized visual analogue scale how they would have valued the health of their mouth if they had lost the tooth described and the resulting space was left unrestored [7]. The visual analogue scale or the rating scale was originated in psychometrics and it is the most commonly used method for measuring health-state preferences [5,8]. It usually takes the form of a 10 centimeter horizontal line with two clear end-points. The left end-point represented the worst health state or number zero. This point was labeled by the statement ‘my mouth could not be worse’. On the other end of the line, the right-hand anchor represented the perfect
health state. It was labeled by the statement ‘my mouth could not be better’. Participants were asked to make a mark on the line and at the point between the extremes which they felt represented the position of the scenario being viewed. The distance from the left hand side of the visual analogue scale, divided by ten, comprised the utility score i.e patient’s evaluation or view towards that tooth loss scenario. The division by ten was in order that full health is represented by unity (Value = 1). Figure 1 illustrates the visual analogue scale used in this investigation. The order in which the different scenarios were presented to participants was changed for each participant in order to avoid any ordering effects on the ratings given.

Analysis

Visual analogue scales were used to determine how ‘mouth health’ was rated when various scenarios of tooth loss had occurred. These types of rating scale have been shown to have good intrarater reliability ($r = 0.70 – 0.94$) and good interrater reliability ($r = 0.75 – 0.77$). Test – retest reliability is also greater for rating scales than for other methods of utility measurement, such as standard gambles or time trade-offs (8). For this reason, and because of its greater ease of understandability for patients, the rating scale was chosen as the utility measurement method of choice in this particular study. The utility values for each tooth loss scenario were derived by calculating a simple mean for the participant group as a whole. In order to indicate the variance in the population for each utility value, 95% confidence intervals and standard deviations for the mean values were calculated. Students’ T-test was used to examine whether there was a difference in mouth utility when the tooth type (incisor, premolar, or molar) loss was varied. Students’ T-test was utilized to examine whether males or
females found tooth loss more impactful and this analysis was undertaken for all tooth loss scenarios.

Participants were divided into 3 age groups: Group 1: comprised subjects who were 39 years old or younger (N = 92, 35.4%). Group 2: comprised subjects aged between 40 and 59 years (N = 112, 43.1%), the third age group comprised 56 subjects (21.5%) who were 60 years old or older. To detect any significant differences between the three age groups, the one-way analysis of the variance with a Bonferrroni correction was applied.

**Results**

Over the period of this investigation, 260 partially edentulous subjects participated (102 from Aleppo Faculty of Dentistry, 84 from University Dental Hospital of Manchester and 74 from Kerman Dental School). The mean age of the participants was 46.48 years. The number of female subjects exceeded the number of male subjects (143/117). All participants had experienced tooth loss and 216 (83.1%) of them had dentitions with unrestored dental spaces at the time of the interview.

<table>
<thead>
<tr>
<th>Tooth loss scenario</th>
<th>Mean utility value</th>
<th>95% confidence interval for mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper central incisor</td>
<td>0.13</td>
<td>(0.11, 0.15)</td>
<td>0.17</td>
</tr>
<tr>
<td>Upper lateral incisor</td>
<td>0.21</td>
<td>(0.19, 0.24)</td>
<td>0.22</td>
</tr>
<tr>
<td>Upper canine</td>
<td>0.26</td>
<td>(0.23, 0.29)</td>
<td>0.22</td>
</tr>
<tr>
<td>Upper 1st premolar</td>
<td>0.31</td>
<td>(0.28, 0.34)</td>
<td>0.22</td>
</tr>
<tr>
<td>Upper 2nd premolar</td>
<td>0.36</td>
<td>(0.33, 0.39)</td>
<td>0.23</td>
</tr>
<tr>
<td>Upper 1st molar</td>
<td>0.37</td>
<td>(0.34, 0.40)</td>
<td>0.25</td>
</tr>
<tr>
<td>Upper 2nd molar</td>
<td>0.44</td>
<td>(0.40, 0.47)</td>
<td>0.27</td>
</tr>
<tr>
<td>Lower central incisor</td>
<td>0.17</td>
<td>(0.14, 0.19)</td>
<td>0.20</td>
</tr>
<tr>
<td>Lower lateral incisor</td>
<td>0.20</td>
<td>(0.17, 0.22)</td>
<td>0.21</td>
</tr>
<tr>
<td>Lower canine</td>
<td>0.24</td>
<td>(0.22, 0.27)</td>
<td>0.21</td>
</tr>
<tr>
<td>Lower 1st premolar</td>
<td>0.28</td>
<td>(0.26, 0.31)</td>
<td>0.21</td>
</tr>
<tr>
<td>Lower 2nd premolar</td>
<td>0.33</td>
<td>(0.30, 0.36)</td>
<td>0.22</td>
</tr>
<tr>
<td>Lower 1st molar</td>
<td>0.36</td>
<td>(0.34, 0.39)</td>
<td>0.22</td>
</tr>
<tr>
<td>Lower 2nd molar</td>
<td>0.42</td>
<td>(0.39, 0.45)</td>
<td>0.24</td>
</tr>
</tbody>
</table>

*Table 1: Participants’ mean utility values of 14 tooth loss scenarios. Utility values are within the range 0 – 1, where 0.0 = total lack of oral health and 1.0 = total oral health.*

The mouth with the upper central incisor missing attracted a utility value of 0.13, the one with a missing second upper molar and a missing second lower molar attracted the utility values of 0.44 and 0.42 respectively. These results are presented in Table 1.
The participants’ mean utility values according to tooth type are shown in Table 2.

When t-tests for paired observations were used to detect any statistically significant differences in the mean utility values according to tooth type, the results indicated that mouths with missing anterior teeth attracted statistically significantly lower utility values when compared to mouths with missing premolar and molar teeth. No significant differences were found in the utility values of mouths with missing upper and lower anterior teeth, and between missing upper and lower molars (Table 3).

Table 4 shows that when upper incisors, canines, premolars and molars were missing, the perceived utility of the mouth was statistically significantly lower for women than for men ($p < 0.05$).
This was also the case for lower incisors, canines, premolars and molar teeth.

Table 5 shows that missing teeth had a greater effect on mouth utility in the younger participants, but the difference did not reach statistical significance in all tooth loss scenarios.

Discussion:

In utility measurement the ideal is that the raters are appropriate to the purpose of the study [9]. A sample of partially edentulous patients was therefore the most appropriate one to use as
Pettiti [10] states that when utility measurement applies to patients with a given condition, patients with that condition (i.e. in this case, varying degrees of partial but incomplete tooth loss) should be used as raters. The published literature on measurement of health preferences provides little guidance on the choice of the numbers needed. The sample size was therefore chosen on the basis of practicality and pragmatism.

The empirical acceptability of the results implies constructive validity [11] i.e. the fact that the loss of a front tooth was perceived or valued as more impactful than the loss of a posterior tooth fits with generally observable behaviors. This suggests that the methodology chosen has validity, in that it appears to measure what it purports to measure.

The findings of this investigation illustrate clearly the great negative impact of tooth loss on the psyche of our patients. This is lined with previous investigations which studied the emotional and social burden of tooth loss on partially and completely edentulous subjects (12-17). However, this study shows that our patients unconsciously perceive that the value of the tooth increased as the tooth in the scenario moved from the posterior towards the anterior aspect of the mouth. This indicates that prosthetic interventions to replace missing anterior teeth are more valued by our patients than prosthetic interventions to replace missing posterior teeth. The poor compliance of a large number of patients with partial dentures which replace only missing posterior teeth may be explained by this finding. Clinicians should bear these results when planning the restorative dental treatment for partially edentulous subjects.

Women perceived tooth loss as having a much greater impact on mouth utility than men did. These results perhaps suggest that aesthetics contributes more to mouth utility in women.

The results relating to age are extremely interesting. Age potentially has a dual effect on mouth utility. Firstly, older individuals are likely to have poorer oral health than their younger counterparts [18]. Therefore, among that group, tooth loss might be considered ‘normal’ or ‘to be expected’ and therefore, because of human desire to ‘fit’ and because some events are considered almost ‘natural’, the impact of the event (in this case, tooth loss) could be expected to be lower in the older age group. In the younger age group, mouths are generally healthier and therefore tooth loss is more of an abnormality, and, possibly because their expectations of tooth retention is greater,
the impact of any tooth loss could be expected to be higher. The results of this work support these hypotheses, and illustrate more profound psychological and functional impact of tooth loss among younger subjects.

Overall, this study has demonstrated the feasibility of making real patient-based evaluations of oral health status. The study implies that maintaining anterior teeth would be more greatly valued by the study population than maintaining posterior teeth. Loss of posterior teeth is less psychologically impactful than loss of anterior teeth. This is despite the importance of posterior teeth in performing the masticatory function.

The study did not set out to determine how an individual’s own state of oral health, or social class, level of education and economic situation affected the values they assigned. However, now that the methodology has been tested, this would be a valuable next step.

Being able to explicitly evaluate differences in the importance of maintaining natural teeth in different parts of the mouth might also offer a guide as to the amount of effort and finance we should be prepared to put into preventing disease and tooth loss. The analysis presented here would suggest that interventions to protect anterior teeth, would have a greater cumulative value to the populace, than preventative measures designed to protect posterior teeth. This is not to say that both are not worthwhile, just that they offer outcomes of differing value. Setting of strategic priorities is required in public health interventions, as well as to individual treatment planning. Kayser [19] has suggested that the optimal methodology for setting such priorities is to divide teeth into those which are strategically important to the patient and those which are not. The methodology presented offers a mechanism whereby patient-centred prioritization of services can be undertaken.

**Conclusion**

The results of this study imply that maintaining anterior teeth would be more greatly valued by the study population than maintaining posterior teeth. Loss of anterior teeth would result in more psychological impact than loss of posterior teeth. Age and gender influence how the dentition is valued. Tooth loss may have more negative impact among younger subjects and aesthetics contributes more to mouth utility in women than in men. Further studies are required to know the psychological impact of tooth loss and its relation
to patient’s oral health status, social class, economic situation and level of education.

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Diurnal Fluctuation of Medically Controlled Intraocular Pressure

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Abstract

Primary chronic (open-angel) Glaucoma is the second cause of blindness.

We have to concentrate on the fluctuation of the intraocular pressure during the treatment with anti-glaucoma medications, and not to measure IOP only once a day, because this fluctuation has an important role of the progression of the disease.

We tried to evaluate the amount of reduction of the elevated intraocular pressure, and the fluctuation of this pressure by the different kinds of anti-glaucoma medications: Timolol, Brimonidin, Dorzolamide, Dorzolamide/Timolol and Latanoprost/Timolol.

We enrolled 50 patients with primary chronic glaucoma in our study (10 for each group of drugs), who were admitted in Aleppo university hospital during 6 months (between January 2008 and July 2009), and the intraocular pressure was measured 4 times a day.

We found that the fixed combination between Latanoprost 0,005% and Timolol 0,5% is more effective in reducing the intraocular pressure (46,2%) than the other anti-glaucoma medications. On the other hand, we found that the fixed combination between Latanoprost 0,005% and Timolol 0,5% results in less fluctuation in intraocular pressure than the other drugs (only 1,4 mmHg).

So, we recommend using the fixed combination between Latanoprost and Timolol as the first choice of the treatment of the primary chronic (open-angel) glaucoma.
Comparative Study Between Ropivacain and Lidocaine in Oral Surgery
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Abstract
Recently, new types of local anesthesia have been entered into dental procedures to enable the dentist to choose among them according to their need such as Ropivacaine, which was first used in regional and epidural anesthesia.

A comparative study was conducted between Ropivacaine (0.75%) and Lidocaine (2%) in maxillary infiltration anesthesia.

40 healthy individuals with a mean age of $19.14 \pm 6.06$ years participated in the study. All subjects had no systemic disease, no allergic history, or pregnancy, no inflammation or local infection. All subjects were indicated to bilateral upper premolars extractions. Ropivacaine (0.75%) was injected in one side and Lidocaine (2%) in the other side of the maxillary jaw to block frontal palatal nerve and middle upper alveolar nerve. Extractions were performed according to the suitable academic methods for each case, and there was one week between the extractions.

Both anesthesia solutions were evaluated by post-extraction pain and bleeding.

The data were analyzed by SPSS 15 using Student’s t-test, Mann-Whitney and Wilcoxon W.

The postoperative pain was significantly higher in lidocaine after half an hour, an hour, two hours, three hours, and six hours after injection. Pain started after almost 1.5 and 5h of injecting lidocaine and ropivacaine respectively.

Bleeding of intraoperative and postoperative was significantly higher in lidocaine. No significant clinical and toxic changes were found between lidocaine and ropivacaine.

Ropivacaine (0.75%) offers prolonged anesthesia, postoperative pain suppression, and adequate control of intraoperative and postoperative bleeding.

Received 14/12/2009
Accepted 17/1/2010
Craniofacial Complex Architecture  
in Syrian Subjects with Class III Malocclusion  
Frontal Cephalometric Study

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Abstract

The Aim of this study to estimate the characters of craniofacial complex of class III malocclusion in Syria by frontal cephalometric study. the study implicated on a sample of 70 Syrian patients with Class III Malocclusion divided into tow groups 33 cases 9-13 yare age 37 cases 14-18 years age compared with a normal control group of 40 syrian patients that was matched for age group 11 cephalomeric variables on the frontal cepalometric films were analyzed statically Results exhibited a distinct craniofacial morphologic characteristic there were a decrease in the widths of maxilla base and increase in the width of the mandible and first molars cross bit in the tow groups of class III compared to normal occlusion groups and a decrease in the width of the nose in class III at age 14-18 years

Conclusion: the characters of craniofacial complex of class III malocclusion in Syrian patients by frontal cephalometric study exhibited a distinct craniofacial morphologic characteristic and refereed to the importance of treatment in the frontal dimension by expantion of class III malocclusion.

Key words: frontal cephalometric, craniofacial complex, Class III- Malocclusion
A Study of Light– Intensity Through Different Thickness of Dental Ceramic

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Abstract

The purpose of this study is to measure the light-intensity of plasma Arc light curing unit through different thickness of dental ceramic.

Sixty samples of ceramic (VITABLOCS ESTHETIC LINE for CEREC/inlab of German origin) with 1M1 shade were prepared with different thickness between 1.4 and 6 mm (9.96 mm length- 7.95 mm wide) and were measured by digital caliper.

The plasma Arc light cure unit 2500 mW/cm$^2$ was used to measure light intensity through different thickness of dental ceramic samples.

The results of this study showed that the light-intensities were respectively 1750, 1670 & 1340 mW/cm$^2$ when the thickness in each sample was 1.5, 2 & 4 mm. The radiometer did not give results when the thickness of sample was more than 4.8mm.

It is concluded that when the thickness of ceramic increases the light intensity decreases. Thus it is recommended to use high intensity light curing unit when ceramic restorations are used.

Keyword: light curing unit, Plasma Arc, intensity, dental ceramic, resin cement.
The Relationship Between Thyroid Stimulating Hormone (TSH) and Dyslipidemia in Overweight and Obese Patients

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Abstract

Obesity has reached epidemic proportions globally, with more than 1.6 billion overweight individuals aged over 15. At least 400 million of them are clinically obese, and this is a major contributor to the global burden of chronic disease and disability. As usually coexisting in developing countries with under-nutrition, obesity is a complex condition, with serious social and psychological dimensions, affecting virtually all ages and socioeconomic groups. The association between TSH and serum lipids in people with no apparent thyroid disease is insufficiently understood. We have studied the association between normal thyroid function, defined as TSH within the reference range of a general population, and concentrations of serum lipids. The present study included 151 obese patients attending Aleppo University Hospital in the period between June and December 2009. These patients underwent full clinical examination, radiological, and laboratory biochemical tests to evaluate obesity, dyslipidemia, and thyroid function tests. Results: total cholesterol level was $214 \pm 54$ mg/dL, and triglycerides level was $162 \pm 125$. There was no statistical relation between cholesterol levels and obesity, but there was statistically significant correlation between triglycerides and the degree of obesity. No significant relation was found between TSH levels and obesity although there was a trend of high levels in the normal reference range in overweight and obese patients. Lipid profile and thyroid function tests are important parameters in evaluating overweight and obese patients for risk and treatment options.

Key words: Triglycerides, Cholesterol, obesity, Body Mass Index.

Received 12/1/2010
Accepted 24/1/2010
Study of Effect of Preparation Design on the Fracture Resistance of Zirconia Crowns

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***Postgraduate Student (MSc.) Dept. of Science of Engineering Materials, Faculty of Mechanical Engineering, University of Aleppo

Abstract

The aim of this in vitro study was to evaluate the effects of different preparation designs on the fracture resistance of single-crown zirconia fabricated by manual milling, and to compare this resistance according to three kinds of finishing lines: round shoulder, chamfer, and knife edge.

Materials and Methods: Right maxillary first premolar dies of metallic alloy were fabricated with three different preparation designs:
1- round shoulder with width of 1mm.
2- chamfer with width of 0.5mm.
3- knife edge.

Ten zirconia crowns were fabricated by manual milling for each type of preparation. After cementation by zinc phosphate cement, they were loaded until fracture by using a testometric. Data were recorded for ceramic veneer and zirconium core, and analyzed by variance analysis (ANOVA) followed by Bonferonni's test (P = 0.05).

Results: There were not significant differences in the breaking load of knife edge and round shoulder. There were significant differences in the breaking load of chamfer and knife edge. There were also significant differences in the breaking load of chamfer and round shoulder. The round shoulder preparation had a mean breaking load of (veneer: 2760 N, core: 4169.5 N), chamfer (veneer: 1800 N, core: 2927.3 N), and knife edge (veneer: 2456.6 N, core: 3885.7 N).

Conclusions: The research concluded the following:
1- Zirconium restorations have high fracture resistance for all experimental designs.
2- Round shoulder preparation has highest fracture resistance.
3- Ceramic veneer is the weakest aspect of these restorations.

Received 31/12/2009
Accepted 26/1/2010
An In Vitro Comparative Study of Retention of Onlay-Retained Bridges with New Design

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Abstract

Statement of problem: Many different bridges with intracoronal retainer have been reported, but only a few of them have been studied according to tensile bond strength.

Purpose: The purpose of this study was to examine the tensile strength of three types inlay & onlay-retained FPDs.

Material and methods: Thirty-six metal ceramic inlay & onlay-retained FPDs of three units (using human upper and lower molar and premolar teeth) were divided into 3 groups (n=12): the 1st group is with onlay retainers, the 2nd group is a new design (of occlusal wings covered with composite filling) which is divided to two subgroups with two thicknesses.

All teeth were prepared to the same dimensions, considering reasonable human variation. Analysis of variance was applied to the data (P<0.05), and differences among means were determined.

Results: Onlay-retained FPDs exhibited the most tensile strength then the new design with the occlusal wings (1st sub group) and the last one is 2nd subgroup.

Conclusion: Within the limitations of this study, significant difference was observed among 3 groups and tensile bond strengths in Newton which were as follows: for the onlay-retained bridges, they were 394, 2 N; for the 1st subgroup of the new design, they were 305.9N; and for the 2nd subgroup of the new design, they were 302, 7N. So the onlay-retained bridges have more retention number than the new design, but the new design bridges have more esthetic appearance than the onlay-retained. When a patient asks for more esthetic prosthesis, we can use the new design for him/her.
Craniofacial Complex Architecture in Syrian Subjects with Class III Malocclusion
Lateral Cephalometric Study
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Abstract

There are few studies about the architecture of craniofacial complex patients of class III malocclusion, the purpose of this study was to estimate the characters of craniofacial complex of class III malocclusion in Syria by lateral cephalometric study: implicated on a sample of 33 Syrian patients with Class III Malocclusion 9-13 yeare compared with a normal control group of 20 syrian patients that was matched for age. 43 cephalomeric variables were analyzed statically. Results exhibited distinct craniofacial morphologic characteristic The Maxillary length was often smaller in the patients with Class III malocclusion.

The mandible was more protrusive, and there was an increase in mandible body length and a more forward positioning of the glenoid fossa and TMJ Both the anterior cranial base and posterior cranial base were not different than normal in the Class III group A significantly larger vertical face dimension and longer lower anterior facial height there were an increase in the protrusion of the maxillary incisors, there was a decrease in nasal labial angle.

Conclusion: the characters of craniofacial complex of class III malocclusion in Syrian patients in the mixed dentition referred to distinct morphologic characteristic of maxilla and mandible without cranial base that reffered that early treatment is suitable for these cases. Key words: craniofacial complex, class III, malocclusion, lateral cephalometric

Received 12/11/2009
Accepted 31/1/2010
Reaction of Gingival Tissues to Metal & Metal Free Ceramic Crowns (Clinical Study)

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Abstract

Statement of Problem: The relationship between the margins of fixed prostheses and periodontal tissues is very important and dangerous.

As we know, we have three types of finishing lines according to their locations: Supra-gingival, Sub-gingival, and Equi-gingival.

Purpose: The aim of this clinical study is to evaluate the optimum reactions of periodontal tissues to different kinds of dental materials (metal-ceramic, and pure ceramic).

Material & Methods: (39) patients were evaluated in this study. They were treated with several kinds of fixed prostheses, with several kinds of dental materials (metal-ceramic, and pure ceramic).

The follow-up procedures for patients continued until six month after treatment. We studied the following index: Plague index, Gingival index, Probing depth, and Tooth mobility.

The results: The results of this study have observed that the sub-gingival finishing line is not favorable for all kinds of dental materials.
The Role of MRI in Diagnosis of T.M.J Lesions

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Abstract

Lesions of Temporomandibular joint are considered one of the worldwide diseases. Statistics indicate that 35% of the American people suffer from a lesion in Temporomandibular joint. Although in our country there is no similar statistics that determines the rate of the disease, this does not deny its large diffusion here, owing to noticing it in the ambience, and to the increasing number of patients who visit dental and mandible disease clinics.

We should consider that there is a lesion in Temporomandibular joint for each patient complaining from facial pain or stubborn headache, articular rattle, or clicking accompanied with mouth opening or shutting. Also, the limitation of mandible movement indicates strongly the existence of advanced lesion in the joint that should be checked or diagnosed.

M.R.I. is a valuable and non contusive method. In addition, it is an adequate technique to discover the Temporomandibular joint diseases (T.M.D.), especially for the soft tissues inside the joint, like the Articular disk, Articular ligaments and peripheral muscles. Besides, it has a growing role in discovering the bony alterations, as bony cortex and bone marrow alterations. Furthermore, it determines the existence of joint effusion or not, which is considered as a sign that may be accompanied with most of T.M.D. diseases.

This valuable method, i.e. M.R.I., comes in the first position in diagnosing the lesions of Temporomandibular joint. However, in our country it does not take its suitable diagnosing tool, owing to either its relatively high cost, lack of real interest in the therapist doctor, or the scarcity of resonance equipments with enough magnet power which is able to diagnose these diseases.

- Our study included 69 subjects who visited imaging department in Al-Kindi educational hospital during the period between 2007–2008. Among them, there was a sample of 10 normal persons who did not suffer from any Temporomandibular symptoms.

Received 18/1/2010
Accepted 8/2/2010
The rest 59 persons had a problem in the Temporomandibular joint. Five of them were excluded as they had no lesion in the Temporomandibular joint. Another one was excluded owing to a mobility artifact. And still another patient was excluded as he could not bear the examining procedures. So there were 52 patients left who had Temporomandibular joint disease, which was confirmed by M.R.I. This sample which is mentioned consists of 17 males and 35 females, and their average age is about 32 years.

Imagining results showed that:

There were three principal diseases: 1) Disc Displacement, 2) Osteoarthritis, 3) Arthritides. The most common disease was Disc Displacement (D.D.), its rate was 79%, while Osteoarthritis rate was 23%, finally, Arthritides with rate of 11.5%. The age distribution of these diseases was as the following: first peak was in the age class (20 – 30 years) with rate of 31%. The other peak was in the age class (40 – 50 years), with rate of 27%. While distribution according to the sex was as the following: 67% female and 33% male.

- The most common symptom was facial pain, followed by movement limitation, and finally the Articular clicking.

- Regarding the Disc Displacement (D.D.), it was observed in relatively small age spectrum. Its peak was in the age class (20 – 30 years) with rate of 34% of patients. The other age peak was in the class (40 – 50 years) with rate of 27%. This disease was observed in female more than in male patients, with rates of 73% and 27%, respectively.

- The most common displacement direction was the anterior displacement with rate of 46%, followed by the antero-external displacement with rate of 32%. And the less common one was the posterior displacement with rate of 1%.

- It was noticed that the displacement was mostly bilateral with rate of 78%, compared with 22% unilateral. The rate of spontaneous disc reduction during mouth opening was 65% for non-reduction displacement, compared with 35% for reduction displacement.

- Regarding Osteoarthritis, there were 12 patients among the whole patients, that was 23%, with two age classes corresponding with the two age classes of disc displacement patients, i.e. (20 – 30 years), then (40 – 50 years). It was observed in females more than in males, 58% and 42% respectively. The most common symptoms were the condylar flattening with bony Osteophytes with rate of 67%, while the erosion in the Condyle was observed with rate of 42%. While the less one was
the hardening of Mandibular Condyle as it was observed with rate of 8%.
- The Arthritides was represented by Rheumatoid Arthritis with rate of 67%, Ankylosing Spondylitis with rate of 16.5%, and the Psoriatic Arthritis with rate of 16.5%. The age distribution of these three diseases was at its peak in the age class (30 – 40 years) and (40 – 50 years) with the same rate, 33.5%. It was in females more than in males, 67% and 33%, respectively.
- Most cases were bilateral with rate of 67%. The most important observed symptoms in the Rheumatismal cases were the bony destruction and deformity, followed by the destruction of Articular disc, then the bone marrow edema and joint effusion.
- As for the secondary symptoms which were accompanied with the main symptoms, and which were observed on the M.R.I. images, the most common ones were joint effusion, that usually came with Osteoarthritis with rate of 40%, then Articular disc displacement with rate of 19%, and the less common ones were the Arthritides lesions with rate of 27%, and usually it is unilaterally located.
- The other secondary symptoms were the bone cortex alterations, which came with Osteoarthritis with rate of 92%, then the Arthritides lesions with rate of 83%, and the less common came with the Articular disc displacement with rate of 44%
- The third group of the secondary symptoms was the alterations of bone marrow, which usually came with Osteoarthritis, with rate of 58%, while it was the same in the other two diseases.
- The last group of the secondary symptoms, which is the thickening of L.P.M., came with Osteoarthritis commonly with rate of 41%, and came with the Arthritides lesions with rate of 33%. While it came with the Articular disc displacement with rate of 15%.

The final results of our study corresponded exactly to the global studies, with little difference in some points, owing to the small sample volume here, or the difference in the social nature.
The Effect of Platelet Rich Plasma in the Treatment of Distal Pocket Following the Extraction of Impacted Mandibular Third Molars

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Abstract

Purpose: The extraction of mesioangular impacted mandibular third molars may cause multiple periodontal defects in the distal root of the second molars. This paper aims to investigate the influence of Platelet-rich plasma (PRP) on Distal Pocket; and to examine its role in repairing and preventing periodontal complications in the extraction site.

Methods and Materials: The study specimen included 15 patients aged between 19 & 30 years. All patients had bilateral symmetric mesioangular impacted mandibular third molars with a probing depth greater than 3 mm. The study specimen was divided into two groups:

- Study group: PRP was applied on the alveolar socket after the extraction.
- Control group: Third Molars were surgically removed without any further application.

Afterwards, pocket depth and clinical attachment level were measured. Results: We observed statistically significant differences in both probing of pocket depth and clinical attachment level when comparing between the two groups for 12 &18 weeks after surgery.

In this regard, the probing of pocket depth and clinical attachment level values were statistically lesser in the plasma group when compared to the control group for 12 &18 weeks after surgery.

Conclusion: A notable reduction was showed in both pocket depth and clinical attachment level. Nevertheless, no complication or postoperative allergic reactions were documented.

Key words: Impacted mandibular third molars, Distal pocket PRP.

Received 14/12/2009
Accepted 21/2/2010
Diagnostic Value of Serum Procalcitonin Assay and Its Role as an Early Marker of Neonatal Sepsis

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Abstract

The research is conducted to evaluate the role of procalcitonin (PCT) as a marker in the early diagnosis and follow-up of neonatal sepsis, and to compare it with C-reactive protein (CRP) and white blood count (WBC).

This prospective study was conducted in the Department of Pediatrics, University Hospital, Aleppo, Syria from November 2008 to May 2009.

A total of 47 neonates aged 1-30 days were enrolled in this study and classified as: sepsis group (n=25) with culture-proven sepsis, and controls (n=25), blood was sampled for routine laboratory investigations including blood culture, CRP, WBC, and PCT levels.

Serum PCT levels were significantly more increased in proven sepsis (14.1±18.7 ng/ml) than the values in the controls (0.38 ± 0.43 ng/ml; p = 0.001). In addition, on the 7th day of therapy, neonates who had achieved clinical recovery had a significant decrease of PCT levels (0.26 ± 0.37 ng/ml) compared to the initial values (p = 0.001).

The Optimum diagnostic PCT cut-off value was (PCT ≥ 0.8 ng/mL), which provided a sensitivity of 84%, specificity of 86%, positive predictive value (PPV) of 86%, and negative predictive value (NPV) of 84%.

Measurement of PCT concentrations is a better diagnostic marker of infection than CRP and WBC, and it seemed to be a valuable marker for early diagnosis of neonatal sepsis, and for evaluating the response to antibiotic treatment.

Received 14/1/2010
Accepted 28/2/2010
The Role of Some Immunological Markers in the Diagnosis of Type 1 Diabetes (Syrian Study)

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Abstract

Type1 diabetes as an autoimmune disease presents several islet cell autoantibodies such as anti-insulin, anti-glutamic acid decarboxylas (GADA), and the antibody against tyrosin phosphatase (PTP)- like proteine known as ICA-512 (IA-2A).

We want to determine the frequency of the GADA, and IA-2A autoantibodies in Syrian type1 diabetics.

We studied 80 diabetes mellitus type1 patients. GADA and anti IA-2A autoantibodies were detected with IRMA assay.

The frequency of positive results in diabetes mellitus type1 patients was 46.25% for GADA, and 35% for IA-2A.

This study has shown that GADA and IA-2A are good markers in the diagnosis of diabetes mellitus type1 patients, and the combined analysis of GADA and IA-2A is more effective in detecting diabetes mellitus type1 patients, and also because the positivity for multiple diabetes autoantibodies in diabetes mellitus type1 patients is associated with accelerated β-cell destruction and increased requirement for exogenous insulin.

Key words: IDDM, Immunological markers: IA-2A, GADA.
Surgical Management of Traumatic and Acquired Diaphragmatic Injuries

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Abstract

• Diaphragmatic hernia and injury are serious problems in surgery and immediate plans (urgent sometimes) must be taken to solve it. Recently, the new imaging (as manometry, PH metry) for esophagus has been true revaluation in medicine to understand physiology of hiatus hernia and a surgeon can already do detailed assessment for patients pre, during and post operation; then morbidity and mortality will be less.

• The aim of the study is to share our experience in diaphragmatic hernias and injuries with its open and laparoscopic repair in our hospitals, and it was conducted between 2002 and July 2007. Our study had 76 cases in 2 groups: 17 cases in (traumatic): group1, and 59 cases in (hiatus hernia): group2.

Results of study: Male cases in group1 were (88,3%), and female cases were (11,7%). In the 2nd group, male cases were (57,6%) and female cases were (42,4%). The more repeated signs in group1 were Short breathing (88,24%), then abdominal pain (76,47%). While in group2, they were Retrosternal burn (96,6%), then GERD (89,8%). CX Ray and barium swallow in the 1st group was positive (57,15%). In the 2nd group, barium swallow in hernias cases was (89.8%). Surgical procedure was opening in 100% in group1 and in 64.4% of patients in group2 with upper Medline approach, while laparoscopic technique was in 35.6%. Complete symptom relief was seen in 91.5% (at 6-12 months).
The Reliability of Pederson Scale in the Classification of Surgical Difficulties of Extracting Impacted Lower Third Molars

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Abstract

The objective of this study is to evaluate the reliability of Pederson Scale in the classification of surgical difficulties in extracting of Impacted Lower Third molar teeth.

This study was conducted on a series of /100/ extractions of impacted lower third molars. Each of operative difficulties was predicted preoperatively by Pederson scale and scored postoperatively with modified Parant scale.

The results show that preoperative classification of difficulty by Pederson scale was not an accurate prediction (sensitivity test 37% in comparison with sensitivity test of Parant Scale 67%), and there was no significance between Pederson Scale and duration of surgery or doctors estimation.

It concludes that Pederson Scale is not significant for the prediction of operative difficulty in the extracting of impacted lower third molars and should be modified and we need to take into consideration the other important factors.

Keywords: Impacted Lower Third Molars, Pederson Scale, Parant Scale.

Received 14/2/2010
Accepted 11/3/2010
Determination of Zinc in Milk Powder by Differential Pulse Anodic Stripping Voltammetry

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Abstract

Differential pulse anodic stripping voltammetric (DPASV) method has been developed for the determination of zinc in milk.

In presence of buffer (NaCH₃COO and KCl) as supporting electrolyte at pH=7.4, the Zinc was determined by DPASV method, after depositing it on the hanging mercury drop electrode (HMDE) at deposition potential value -1.15V vs. Ag/AgCl, then the anodic peak current (Ip) was measured at (Ep = -1.0V) peak potential. The results showed that the calibration curve Ip=f(C) was linear at ranges 0.01-0.10mg/L and 0.5-10.0 µg/L, after 90sec and 120sec deposition periods respectively and the minimum concentration of Zinc which was detected is 0.005 µg/100ml with the relative standard deviations (RSD) of ± 5.3%. The proposed method is applied for determination of zinc in some milk powder. The samples were treated with mixture of nitric acid and hydrogen peroxide in the microwave oven. And zinc was determined in milk powder by using the standard addition calibration curve. It has been found that different samples of milk powder have the average amount of zinc 4.5mg/100g. This study showed that zinc content in samples of milk powder which were studied falls within the allowed range. And the results of zinc determination showed that there is no interference from any additives, which may be present in milk powder. It is concluded that the developed method was simple and faster than any other methods.

Key Words: Zinc, milk powder, anodic stripping voltammetry.

Received 31/12/2009
Accepted 11/3/2010