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Dear Colleagues,

This first pilot issue of the Romanian Journal of Dental Education is a real necessity for the dental medicine, which needs landmarks and standards. This idea is supported by the affiliation of the Romanian Dental Association for Education to the European Dental Association, which plays an important role in determining the competences that govern the medical practice at the European level.

THE ROMANIAN DENTAL ASSOCIATION FOR EDUCATION (ADRE)-member of ADEE (European Association for Dental Education), AMR (Association of Physicians from Romania) – has the purpose to create a specialized framework to put together specialists from the dental medicine area as well as from the university education area, based on their free will, in order to connect the Romanian education system to the European one and to achieve the curricular uniformization – in country and abroad.

We cannot speak of professional competences in the age of top technologies, of nanomaterials and nanoconstructions without an educational system able to reflect the quality of the medical act at a later stage. This first starting point underlines the necessity of a periodic publication of this journal, with a deep practical impact.

Editor in Chief,
Professor NORINA FORNA, DMD, PhD
Dean, Faculty of Dental Medicine
University of Medicine and Pharmacy “Grigore T. Popa”, Iasi
THE REPRODUCIBILITY OF TWO FACEBOW REGISTRATIONS*

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University of Medicine and Pharmacy Tg. Mures
Department of Prosthetic Dentistry and Oral Rehabilitation

*Meeting Abstract of Communication

Keywords: facebow, articulators, reproducibility

INTRODUCTION
The facebow is a device used to mount the maxillary cast accurately on the articulator, usually relying on arbitrary located anterior and posterior reference points. Mounting the cast on the articulator in the appropriate position is an operator sensitive procedure, able to reduce the chairside and laboratory time involved. There is little evidence available on the accuracy, validity and reproducibility of articulator mounting of models (Tamaki et al, 1997; Celar et al, 1999). The aim of our study was to assess the reproducibility of the face bow registrations using two different arbitrary facebows.

MATERIAL AND METHODS
Seven registrations with the Dentatus articulator facebow (fig.1) and seven with the Whip Mix earbow facebow (fig. 2) have been performed on one subject.

![Figure 1. Dentatus arbitrary face-bow](image1)
![Figure 2. Whip Mix arbitrary earbow face-bow](image2)

Informed consent was asked to this subject for participate in our study. After each registration the maxillary cast has been mounted in the articulator and photos have been taken at the same distance (30 cm) and with the same angulation, using a Panasonic apparatus placed in a standardized position, as well as the articulator. All the images were transferred into computer and processed with Adobe Photoshop® version 7.0 in standardized conditions. The distance between the centrum of the condyle house and the pick of the canine incizal edge was assessed. The GraphPad InStat 3 program has been selected for the statistical analysis of the collected data. Because of the small number of collected samples (30), the
paired t test and the Wilcoxon signed ranks test have been selected for the data analysis, taking into account the fact that the values for the arcon articulator were not normally distributed, according to the Kolmogorov-Smirnov method (NON ARCON 0.2172, p=0.10; ARCON 0.3994, p=0.0012).

**RESULTS**

The values registered for the seven sessions of both facebows and the summary of the statistical data are presented in the tables below (table I and II).

**TABLE I. The values registered of the condyle house center – pick of canine incisal edge distance**

<table>
<thead>
<tr>
<th>Registration</th>
<th>Non-arcon</th>
<th>Arcon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>230</td>
<td>245</td>
</tr>
<tr>
<td>2</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>3</td>
<td>245</td>
<td>245</td>
</tr>
<tr>
<td>4</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>5</td>
<td>260</td>
<td>265</td>
</tr>
<tr>
<td>6</td>
<td>235</td>
<td>250</td>
</tr>
<tr>
<td>7</td>
<td>235</td>
<td>250</td>
</tr>
</tbody>
</table>

**TABLE II. Summary of statistical data**

<table>
<thead>
<tr>
<th></th>
<th>NON ARCON</th>
<th>ARCON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean:</td>
<td>243.57</td>
<td>250.71</td>
</tr>
<tr>
<td># of registrations:</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Std deviation:</td>
<td>10.690</td>
<td>6.726</td>
</tr>
<tr>
<td>Std. error:</td>
<td>4.041</td>
<td>2.542</td>
</tr>
<tr>
<td>Minimum:</td>
<td>230.00</td>
<td>245.00</td>
</tr>
<tr>
<td>Maximum:</td>
<td>260.00</td>
<td>265.00</td>
</tr>
<tr>
<td>Median:</td>
<td>245.00</td>
<td>250.00</td>
</tr>
<tr>
<td>95% Confidence interval inf:</td>
<td>233.68</td>
<td>244.49</td>
</tr>
<tr>
<td>95% Confidence interval sup:</td>
<td>253.46</td>
<td>256.93</td>
</tr>
</tbody>
</table>

The difference between standard deviations of the two kinds of registrations was not statistically significant (*p* = 0.2841)

![Figure 3. The distribution of the registered values by the two sort of facebows](image)

There was no statistically significant differences between the registrations performed with
the two kind of facebows \((p=0.1604)\). It is well known that in the determination of the hinge axis, a superior-inferior malrelation has a greater negative effect than an anterior-posterior of same magnitude. However, because of more stable marks used for the registrations, the Whip Mix facebow showed more consistent mounting repeatability (fig.3).

**DISCUSSIONS**

The data available in the dental literature concerning the reproducibility of facebow registrations are controversial. A lot of factors can alter the accuracy of facebow registrations and thus the transfer of maxillary cast in articulator. Nagy WW et al. (2002), stated that the type of facebow transfer fork clamp may be a significant source of error in recording the reference position due to mechanical distortion. In one of their studies, the mentioned authors showed that the y axis points were the least variable and the x axis the most variable with the non torsion clamp. With the torsion clamp, the x points were the least variable. The mounting procedure error ranged from 0.08-0.21 mm.

The amount of plaster needed to attach the upper cast to the articulator can cause inaccuracy as the plaster expands on setting. This can be avoided by using a low expansion plaster and two separate mixes of plaster if there is a large space between the mounting plate of the articulator and the maxillary cast (Peregnina and Feil, 1994; Clark et al., 2001). The basic premise for use of the retruded position in mounting the models on an articulator is its reproducibility. However, some authors have demonstrated that the registered position may be influenced by the manner in which the mandible is guided into the retruded position (Ingervall, 1971), the material used for registration (Fattore et al., 1984; Assif et al., Piehshlinger Eva, 1993; 1995) and the time of day (Latta, 1992).

There are few available data in the dental literature on the accuracy, validity and reproducibility of articulator mounting of models. The early works comparing jaw movements with the movements on articulator concluded that in fact the articulator is not a good simulator of jaw movements (Kurth, 1949). In other study, Janson (1986) stated that the reproducibility of tooth contacts was observed more frequently in the articulator than in the mouth. Dos Santos and Ash (1988), as well as Hatano et al. (1989) have presented statistically significant differences between the recordings of mandibular movements generated by articulators and by pantographic tracings. In another study (Hatzi et al., 2001) carried out for determining the accuracy of articulator interchangeability and hinge axis reproducibility, the authors concluded that none of the articulator systems was found to be exact and no single articulator was an exact duplicate of another.

The results from our study confirm the few data available in prosthodontic literature using the articulator mounting of models to assess the dental contacts patterns and which have demonstrated that the casts were accurately attached on the articulator and the articulator is an appropriate simulator of both static and dynamic craniomandibular relations (Johnston, 1988; Utt et al., 1995, Clark si Evans, 1998).

**CONCLUSIONS**

Both sort of registrations are reproducible enough to provide an accurate position of maxillary cast in articulator; the earbow facebow seems to be more accurate because of the less arbitrary reference points; only a properly used facebow can reduce the occlusal discrepancy of prosthetic restorations.
REFERENCES


PATIENTS’ KNOWLEDGE AND ATTITUDES TOWARDS INFECTION CONTROL IN THE DENTAL PRACTICE

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PATIENTS KNOWLEDGE AND ATTITUDES TOWARDS INFECTION CONTROL IN THE DENTAL PRACTICE (Abstract). Objectiv: This study aims to investigate patients concern and knowledge regarding the cross-infection risk and the infection control methods in the dental practice. Material and methods: The questionnaire-based survey was conducted among 170 patients aged 16 to 68 years. The questionnaire included 20 items related to the medical staff protection equipment, dentist professional appearance and safety protocols in the dental practice. The patients’ answers were analyzed by gender, age and education level. using the SPSS 15.0 statistical package and levels of statistical significance were set at p<0.05. Results: The results revealed that 83.6% of the patients have confidence that the medical staff protects them from catching general illnesses during dental treatment.45.5% of the patients are concerned about the procedures used by the dentist to control cross-infection. Positive responses were associated with traditional professional clothing as the white coat and the name tag. 89.0% of the patients want the dentists to wear rubber gloves, 63.6% agree to face masks and 47.2% to protective eye glasses. Conclusions: The results of the present study prove that most patients trust the dentist in the matter of infection control protocols adopted in the dental office but they claim a better approach in this domain. The medical team has the responsibility to inform the patient on the measures which have been taken to reduce the risk of infection, in order to increase the public confidence in dental care safety.

Keywords: infection control, patient attitude, dentistry.

INTRODUCTION

The complex clinical activity carried on in the dental practice is associated with a high risk of transmitting pathogen agents from blood and saliva directly through contact with contaminated products, indirectly through instruments and equipments, as well as by cross-infection [1, 6].

The population concerns regarding their health status imply a special interest towards infection control during the dental treatment, not only concerning the HIV infection, but also other infectious diseases such as viral hepatitis, tuberculosis or respiratory infections [2]. The patients’ involvement in their own health care represents a strategy of increasing the medical staff responsibility for the safety of the medical act [4].

MATERIAL AND METHODS

A questionnaire-based study was conducted among 170 patients in 12 dental offices in Iasi. The survey lot included 37% men and 63% women with ages ranging from 16 to 68 years. The questionnaire comprised 20 questions regarding the protective equipment, professional appearance of the medical team, knowledge concerning diseases that can be transmitted during dental treatments and the procedures with high risk of infection. The data
has been analyzed by educational level, age and gender, using the SPSS 15.0 statistical package (levels of statistical significance were set at p<0.05)

RESULTS

The data from the questionnaires revealed the fact that the majority of the patients (83,6%) trust the medical staff in protecting them from contracting general diseases. Only 10,9% avoid the dental care because of the risk of getting infected and 5,5% do not think that they could catch a disease during the dental treatments.

Men (95,5%) showed a higher level of trust in the medical staff than women (75,8%). A percentage of 45,5% of the subjects are interested in infection control protocols applied after each patient (changing the glass for oral rinses, changing rubber gloves and facial mask, surface disinfection). Among those, the majority are young active persons ranging from 19 to 35 years old (46,7%) and 36 to 64 years old (39,1%). The older subjects (80,2%) and those with medium educational level (69,2%) don’t consider that their implication is necessary; 1,8% of the subjects are not interested in those aspects and 10,9% admit that they do not know anything about those procedures. There where significant differences by gender, women involving twice as much as men (51,1% to 27,3%) in making sure that the infection control procedures are applied (fig.2).

The diseases thought by the patients as presenting a high risk of transmission during dental treatments were: HIV infection (67,3%), viral hepatitis B(60,0%) and C (47,3%) and, in a smaller ratio, tuberculosis (25,5%) and flu (21,8%). The subjects with a medium level of education manifested a high concern regarding the HIV infection (84,6%) while the subjects with high education were more worried about the infection with a form of viral hepatitis (72,7%).

Concerning the dentist clothing, 52,7% of the subjects would like the doctor to wear a surgical one made up of a white blouse and trousers, 23,6% prefer the classic gown and only 1,8% of the subjects agree a short blouse over the casual closing. 20,0% of the subjects do not have any specific preference in this domain, 22,7% of them being men. Actually, a significant high percentage(65,5%), especially women and persons with high education, consider that the appearance of the doctor increases the trust of the patient in the quality of the medical act. About half of the subjects would prefer the doctor to wear an ID card.
The evaluation of the answers concerning the protective equipment, revealed the fact that 89,0% of the subjects want the doctor to wear rubber gloves, 63,6% agree to the face mask and 47,2% to the protective glasses; a relative low percentage of the patients (27,7%) are preoccupied by the hair protection with capelins. 98,2% of the interviewed persons, without significant differences by gender or education level, appreciate that those equipments reduce the risk of contracting various infectious diseases during dental treatments.

The medical instruments thought to have the biggest potential of transmitting infections are the endodontic needles (68,1%), the syringe needles (63,6%) and the dental burs (61,8%).

The risk of contracting an infection during the visit to the dental office is associated by patients with lacks in the sterilizing of the instruments (80,0%) and surfaces and equipments disinfecting (54,5%).

The procedures considered to be important for preventing the infection during dental treatments were: dentists’ hands washing (78,2%), the disinfection of the surfaces in the dental practice after each patient (56,4%) and handling the instruments by the doctor in safe conditions (45,5%).

DISCUSSIONS

The results of the study prove the trust of the patients in the medical staff and in the manner of applying the infection control methods. A low percentage of the interviewed subjects think that during the dental treatment they cannot contract a general disease. This fact demonstrates, especially in men, the lack of knowledge concerning the risk of being exposed.

Concernments regarding the procedures used by the dentists to control the infection are expressed particularly by young persons and women, whereas the majority of the old subjects don’t have the necessary knowledge or do not consider that it is of their competence to interfere with the doctor acts. Also, the high level of education inflicts an involvement of the patient in his own health care, with benefic effects over the safety level of the dental treatment.

The majority of the patients want the doctor to use rubber gloves as an essential protective equipment for reducing the risk of infection transmission, the results of our studies being similar with the ones reported in the literature [3,5]. The percentage of the subjects willing to involve in the dental treatment is low revealing the trust granted to the dentist but also the lack of knowledge regarding the risk of infections and the measures needed to prevent it.

The way in which the appearance of the staff influences the perception of the patients regarding their competence reflects in the choices of the subjects for a sober appearance, the classic white gown and an ID seen as a mean of committing to the medical act. The subjects with high education consider that the appearance of the doctor increases the quality of the treatment, whereas the majority of the elderly persons do not asses the professional merits of the dentist by the way he is dressed.

CONCLUSIONS

The medical personnel has the responsibility to inform the patients on the measures used to reduce the risk of diseases transmission and to apply them in an obvious way, in order to reduce the concerns and the avoidance of the dental treatment.

The assessment of the patients’ perception regarding the equipments, procedures and
protective barriers which are not completely regulated by the law has to be a decisive factor for the compliance of the medical staff in using them in the dental practice according to the European standards concerning the safety of the medical act.

REFERENCES
INCIDENCE AND PROGNOSTIC VALUE OF ORAL CANDIDIASIS IN HIV INFECTION

Cristina POPA, Carmen STELEA, Eugenia POPESCU
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Department of Oral and Maxillo-Facial Surgery

INCIDENCE AND PROGNOSTIC VALUE OF ORAL CANDIDIASIS IN HIV INFECTION (Abstract): Oral candidiasis is the most frequent lesion encountered in HIV infected patients and is detected before any other clinical symptoms of oral pathology. Its growth is a complex process of changes in the oral cavity, and sometimes disorders involving the entire body. Its risk is increased by serious factors as follows: autoimmune deficiencies (illness of the primary cells which acts as modulators of the immune response), xerostomia, malignant neoplasm, different therapies (chemotherapy, antibiotic therapy, therapy with steroids) or iron deficiency anaemia.

Keywords: oral candidiasis, HIV infection, prognostic value

INTRODUCTION

The oro-maxillo-cervico-facial territories are areas where manifestations of HIV infection are most often observed. The vast majority of infected patients present at least one oral lesion, which sometimes can be the only expression of the disease. In this context, it is very important for dentists to be well informed of the oral signs of HIV infection. Affection of the oral mucosa is constant, appears early in the disease and it is a clinical indicator of the prognosis, which usually indicates an ominous evolution. Oral candidiasis, frequently observed in HIV infected patients, appears almost always before other clinical oral manifestations. It represents an indicator of immunosuppression, but it can also imply an increase in viral load associated with AIDS or resistance to anti-retroviral medication. The development of candidiasis is a complex process which is influenced by changes that may take place in the oral cavity; sometimes it implies disorders involving the entire body. Increased risk of developing oral candidiasis is associated with several factors including: established immunosuppression (disease of the primary cells implicated in modulation of the immune response), xerostomia, malignant tumours and therapy (chemotherapy, antibiotherapy, steroid therapy) or iron deficiency anaemia.

MATERIAL AND METHODS

Our study covers a period of 6 years and analyses a number of 117 patients diagnosed with HIV infection or AIDS associated with various oral pathology. The study aims to identify characteristics related to the incidence of the disease and biological, clinical and therapeutic aspects which could offer information towards the overall prognosis, therapeutic response and evolution of the disease.

Over the period of study, we followed:
- particularities of the patient group studied, analysis of the early clinical symptoms, the
correlation to the disease stage with reference to specific oral symptomatology.
- the relation between specific clinical and haemato-immunological particularities in different forms and stages of the disease.
- the identification of clinical and therapeutic factors with prognostic value in a unitary analysis of the evolution and response to therapy.

Patients considered eligible for the study:
- serological diagnosis (ELISA confirmed WESTERN-BLOT) was infection with HIV
- absence of history and/or clinical signs of oral, oesophageal candidiasis and absence of anti-fungal treatment at least 3 months prior to present examination.
- with oral pathology encompassing HIV infection

Patients excluded from the study:
- HIV infection without associated oral pathology
- which were associated with other immunological and/or haematological pathology
- with high risk of death.

Evaluation of initial diagnosis was followed by compulsory complete anamnesis, motives for presentation, complete objective clinical examinations, and biological and imagistic paraclinical examinations. Immunological markers (total lymphocyte and beta 2 microglobulin) or viral markers (HIV p24 core antigen) were also used to monitor HIV infection and response to antiretroviral therapy.

The associated oral pathology was monitored by an examination of all patients keeping in line with strict clinical protocols of classification and identification of diagnostic criteria for oral lesions based on recommendations of “EC-Clearinghouse on Oral Problems Related to HIV Infection and WHO Collaborating Centre on Oral Manifestations of the Immunodeficiency Virus”.

### RESULTS

From the total number of patients studied (117 HIV infected), 71 presented signs of low grade or moderate disease (stage A and B-table I), while 46 were classified in final stage of HIV infection (AIDS) (fig. 1).

<table>
<thead>
<tr>
<th>Clinical category</th>
<th>Nr. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>5</td>
</tr>
<tr>
<td>A2</td>
<td>0</td>
</tr>
<tr>
<td>A3</td>
<td>10</td>
</tr>
<tr>
<td>B1</td>
<td>37</td>
</tr>
<tr>
<td>B2</td>
<td>5</td>
</tr>
<tr>
<td>B3</td>
<td>14</td>
</tr>
<tr>
<td>C1</td>
<td>23</td>
</tr>
<tr>
<td>C2</td>
<td>16</td>
</tr>
<tr>
<td>C3</td>
<td>7</td>
</tr>
</tbody>
</table>

![Table I](image)

![Figure 1. Retrospective quantification of the patients on the first appointment](image)
A number of 18 patients were diagnosed as HIV positive on presentation in the out-patient department for various oral affections (5 of whom were in final stage AIDS) (fig.2).

Figure 2. HIV infection known or detected in clinic

Oropharyngian candidiasis was the most frequent lesion found in HIV infected patients. The diagnosis (isolated or recurrent) was made in a number of 88 patients (75.2%). Systemic candidiasis (Candidemia) and fungemia was found in one single patient only.

In approximately 50% of the cases (over a median of 3-5 years) one or several episodes of oral candidiasis were observed. The presence of oral fungal lesions represented the early symptoms that lead to initial diagnosis of AIDS. Although it is not a pathognomic symptom, oral candidiasis, especially in chronic variation, multifocality, or when associated with esophagian candidiasis, was suggestive of AIDS diagnosis, with completion of the clinical pattern developing in the following months.

The following anatomic-clinical forms of candidiasis were encountered: erythematous, pseudomembranous, hyperplasic and angular cheilitis. Table II and fig. 3 present the incidence of cases with candidiasis:

| Table II. Incidence and forms of oral candidiasis reported in the investigated patients |
|-----------------------------------------------|--------|
| Erythematous Candidiasis (atrophic)            | 16     |
| Angular cheilitis                              | 21     |
| Pseudomembranous Candidiasis                   | 38     |
| Chronic hyperplasic Candidiasis                | 13     |

Patient inclusion criteria followed CDC 1994 protocols, with the mention that once a patient was classified as being HIV positive, he can no longer be reclassified in any other clinic-immunological category, even if his clinical or immunological status is modified.

Prevalence of oral candidiasis depended on the clinical stage of the patient as follows:
- stage I (without immunosuppression) – predominantly angular cheilitis registered in 19.4% of the cases
- stage II (moderate suppression) – predominantly erythematous candidiasis - 30.4% of the patients
- stage III (severe immunosuppression) – predominantly pseudomembranous form - 77%
patients (fig. 4).

![Figure 3. The incidence of the cases and forms of oral candidosis reported](image)

![Figure 4. Oral candidosis: clinical forms prevalences correlated with the immune status](image)

Table III presents the relation between the immune status and oral candidiasis in 84 patients (immunological status was monitored over a period of +/- 3 months after initial diagnosis was made).

| Table III. |  |
|---|---|---|
| Oral mucosa | LyT CD4/mmc | LyT CD8/mmcc | CD4/CD8 |
| Normal mucous (24 cases) | 540 | 1100 | 0.50 |
| Erythematous candidiasis (40 cases) | 320 | 790 | 0.40 |
| Pseudomembranous candidiasis (20 cases) | 220 | 840 | 0.26 |

1) *Acute erythematous candidiasis (atrophic)*

All patients presented a mild sensation of discomfort or burning; in 20 cases it was not reported as subjective complaints. The lesions presented in the form of an erythematous area (with varying colour intensity), having a preference to appear at the palate or dorsal part of the tongue. Occasionally, lesion of the tongue and the internal aspect of the lips were covered with a fine white-creamy non-adherent film.

Considering all these aspects the clinician should carefully examine the oral mucosa of the infected patient in order to diagnose and treat different forms of oral candidiasis, starting in the early stages when possible. In 28 cases, erythematous candidiasis preceded the pseudomembranous form. Diagnosis was confirmed in 15 cases, by the presence of *Candida spp* in cultures with Saburaund media; another criterion was positive response to antimicotic treatment.

The clinical form described in literature „median rhomboid glossitis” was observed in 7 cases, as an area of soft, red depapilation, followed by transformation into a rusty, lobulated induration. Form and dimensions varied, but the most frequently encountered was an area of well demarked, 1/1, 25 cm oval or rhomboid shaped lesion on the posterior 1/3 and dorsal aspect of the tongue.
2) **Pseudomembranous Candidiasis**

Subjectively, patients complained of dry mouth, burning sensation, dysphagia and hyper-salivation. Other complaints included pain, sensation of tension in the affected mucosa, and altered gustation. Clinical examination showed the presence of papules or yellowish/white plaques (of a creamy consistency, non-adherent and easily removed by minimal pressure), covering the erythematous surface as an isolated or multifocal layer. Petechial or isolated erythematous puntiform elements were observed occasionally after debridgement of the white deposits. In general, the localisation of these lesions did not present a tropism towards a specific area of the oropharynx (oral mucosa, in the oropharynx, margins of the ventral aspect of the tongue, palatine mucosa).

Some of the lesions had a sudden debut (acute pseudomembranous candidiasis), usually after antibiotherapy; others had a slow, delayed evolution (chronic pseudomembranous candidiasis) which was observed in the majority of HIV positive patients.

Current diagnostic criteria include clinical aspect and positive response to anti-fungal therapy. Histological examination was possible only in a limited number of cases (35 patients). Microscopic examination, with Gram staining, showed the presence of fungi (pseudohypha, spores) in pseudomembranous deposits made up from desquamated keratinocytes, keratin, inflammatory cells, bacteria and fibrin. Biopsy examination revealed a hyperplastic epithelium, inflamed, infiltrated with polymuclear neutrophils, fungal hypha penetrating epithelial basal cells from the surface inwards deeply. In the lamina propria, a lymphoplasmocytic infiltrate was found. In specific stains - H-E, PAS and silver impregnation, fungal hyphae were remarked, with typical „bamboo stick” aspect. From the 98, oral gavaj before and after antimicotic treatment, from the 35 patient, the following biotypes of Candida were isolated: *C. albicans* (66%), *C. krusei* (12%), *C. torulopsis glabrata* (16, 5%), *C. tropicalis* (4%) and *Geotrichum candidum* (1, 5%).

*C. albicans* was isolated in over 75% of the patients after treatment with ketoconazol. In 10 patients with recurrent oral candidiasis, several biotypes were isolated.

There was no correlation observed between the different biotypes of *C. albicans* and the clinical picture of the oral lesions, stages of HIV infection or the number of CD4 cells. In reference to the different biotypes identified between different episodes, a conclusion could not be drawn as to the reappearance of the lesion as an effect of exogenous reinfection or relapse (through modification of the same stem).

Data obtained from literature reports the last possibility without having justified the pathogenic mechanism; alternation of the different biotypes could be in fact a different phenotype expression of the same fungal genotype. These phenotype variations could possibly be due to modifications in the local immune response, physiochemical variations induced by therapy or even ecological oral variations. The differential diagnosis was made with all possible white lesions of the oral mucosa.

3) **Chronic Hyperplasic Candidiasis**

Also named *Candida leukolpakia*, it is the rarest form and also the most controversial. Some authors consider it as being a candidiasis superimposed over a pre-existing leucoplasic plaque, but it has been demonstrated that a fungus can on its own induce hyperplasic lesions at the level of the oral mucosa.

It was represented in 5 patients under the form of a plaque with variable thickness, an
irregular aspect, surrounded by an erythematous area, situated on the dorsal surface of the tongue or on the superior or inferior labial mucosa. Their removal by debridgement was not possible, persisting up to 1-2 years. In 3 patients this was associated with angular cheilitis. In 12 patients, multiple Candida lesions were discovered as being *chronic multifocal candidiasis*. In one case, the leucoplastic area was in intimate contact with zones of red colouring, constituting *spotted leucoplasia*, a situation where it was clinically differentiated from erythroleucoplasia, and which, from the microscopic point of view, presented frequent displasic lesions. The diagnosis was confirmed microscopically, demonstrating fungal hypha infiltrating epithelial hyperplasia and also by therapeutic tests - complete resolution under antifungal treatment.

4) *Angular cheilitis*

Subjective symptoms frequently encountered were sensation of dryness and burning at the level of the lips, associated with impossibility to consume hot or spiced foodstuff.

It has been described under the form of an erythematous area, fissured and covered by crusts, situated at the level of the labial commissures. The surrounding tissue is sheared. The majority of the patients have bilateral lesions, training discomfort and pain on opening the mouth, thus limiting normal oral function. Diagnosis is confirmed by presence of fungus (hypha and blastosporea) from oral prelevations and favourable results to antifungal therapy.

In the study group were isolated *C. albicans* (20% of cases), or associated with *Staphylococcus aureus* (60% of cases), while the rest 20% had just *Staphylococcus aureus*. Pathogenesis of the affection is not sufficiently known and is probably due to the frequent damping of the labial mucosa (due to xerostomia) which permits the micro-organism access to superficial plans of the labial epithelium, accompanied by their desquamation.

In the majority of the patients, the process of localized inflammation at the labial commissures was associated with atrophic or membranous candidiasis, with different localizations.

In the absence of suggestive lesions, and in conditions of suspected candidiasis, the use of quantitative culture from undiluted saliva or from oral gavaj was implemented.

**DISCUSSIONS**

Oral Candidiasis is one of the clinical indicators of the development and progression of infection with the human immunodeficiency virus. The development of this pathology, without a local cause (xerostomia, antibiotherapy, corticotherapy) has to suggest an HIV infection. Our research has proven a close correlation between oral candidiasis after T lymphocyte depletion, with the report of CD4/CD8 and with laboratory and clinical markers of HIV progression. The study has proven that the presence of oral lesions has been in close concordance with the value of biological test results (absolute number of lymphocytes, beta 2 microglobulin, IgA). This correlation (even in the absence of determining CD4 lymphocytes) has imposed an attitude of prophylaxis of HIV infection in asymptomatic patients, with modified biological tests only. Atrophic Candidiasis precedes the pseudomembranous form in the case of HIV infection and appears early in the disease. No significant statistical correlations were found between the presence of atrophic candidiasis and the low CD4 count (p=0.68) or AIDS (p=0.81). The pseudomembranous form is most frequently encountered in patients with AIDS and had a significant statistical association with CD4 lymphocyte count.
under 200 cells/mm³, appearing frequently in the final stages B3, C1, 2, 3 of HIV infection. Angular cheilitis constitutes a candidic associated manifestation of HIV infection which, in our study, demonstrates a severe immunodeficiency. Keeping in mind the possibility of an asymptomatic evolution of candidiasis, the clinician should carefully examine the oral mucosa of the infected patient and thus be able to diagnose and treat the different forms of candidiasis in its early stages. Patients without oral candidiasis have had a better prognosis as compared to those with clinical forms of candidiasis. Thus we have established the prognostic value of oral manifestations of candidiasis, as a marker of evolution in AIDS. Esophageal candidiasis appeared later, in a case with advanced immune deficiency representing a criterion for diagnosing AIDS (over 20% of cases). There were no observations made between AIDS related deaths for different types of oral candidiasis.

**CONCLUSIONS**

Oral manifestations should be considered as clinical signs of HIV infection and as an objective indicator of disease progression. In this context, oral candidiasis is one of the early clinical indicators of infection and its severity. The pseudomembranous form and the atrophic form of candidiasis are markers of HIV, highly predictive for the further development of AIDS.

Oropharyngian candidiasis has been associated with other markers of prognosis: reduction of CD4 lymphocytes, therapy with anti-retroviral agents and evolution of the disease AIDS. Furthermore, for patients with AIDS, oral candidiasis has been a pre-monitor marker for esophageal candidiasis.

The ability to recognise the predictors of HIV progression may step up the decision in administration of early protection for HIV infected individuals. Dentists can play an important role in the detection of symptoms associated with HIV/AIDS and can considerably improve the quality of life for these patients.

**REFERENCES:**

THE EFFECTS OF THE PAIN ENDURED DURING DENTAL TREATMENT

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INTRODUCTION

It has been acknowledged for many years that human pain perception is made up of multiple dimensions, including a sensory aspect and an emotional/affective quality aspect (Price, 1988). Researchers have shown that some “pain” stimuli are associated with high levels of emotionality/affect (for example, cancer pain), whereas other “pain” stimuli can produce relatively low levels of emotional distress (for example, labour pain) (Price et al., 1987). These findings indicate that people can experience very different emotional responses to very similar levels of stimuli intensity, depending on their perception of the event (Gracely, Kwilosz, 1988). Assessment of clinical pain response requires the use of measurement scales designed to capture the different dimensions of pain perception (Logan, 1995).

The dental treatments usually are associated by the patient with pain and anxiety. It is proved that painful therapeutic procedures are the most important reason of generating pain and anxiety during a dental treatment.

An early negative dental experience is probably the most stated single cause for dental anxiety (Locker et al., 1996, 1999). However, a negative dental experience does not necessarily lead to dental anxiety. The 'latent inhibition' theory, for instance, states that a history of positive or neutral dental experiences may serve as a buffer against the development of traumatic associations or experiences (Davey, 1989). As a consequence, high levels of anxiety or fear are developed less easily. Conversely, an early negative dental experience can serve as a one-shot conditioner and may leave a patient with feelings of anxiety. Fear of dental pain is a highly relevant concept in dental pain research and, moreover, in dentistry (van Wijk and Hoogstraten, 2003). Whereas anxiety and fear can be seen as a state of distress in anticipation or in the presence of a perceived danger, respectively, fear of pain can be seen as a state of distress related to a very specific type of stimulus, namely, pain (Gower, 2004). Research suggests that anxious people tend to overestimate anticipated pain. Moreover, individuals tend to overestimate the intensity of aversive events in general, including such events as fear. Therefore, people who are predisposed to respond fearfully to pain are at an increased risk of ending up in a vicious circle of anxiety, fear of pain, and avoidance of dental treatment (van Wijk, Hoogstraten, 2005).

The target of this study is to prove the connection between previous pain and anticipating pain. This study is a part of a larger research project, and the results presented here are only preliminary, they can modify with the advancement of the study (ex. rising patient number).
MATERIAL AND METHOD

This study is based on a questionnaire created by us, which includes general data’s about the patient (age, sex, studies), and also contains four questions, which are helping us to determine, if the patient had any painful experiences during the dental treatment, if he’s anticipating the pain, or if he is avoiding the appointments because of pain.

At the same time we determined the patient’s anxiety level using the Dental Anxiety Scale (DAS) questionnaire. DAS contains four questions about different situations which are occurring during the dental treatment. Every question is rated between 1 (no anxiety) and 5 (very anxious), the final score can alternate between 4 and 20. A result higher than 15 is the proof for a high level of anxiety.

The patient’s selection was based on the next criteria’s:
1. patients older than 18
2. patients who had contact with one or more dentist’s before the start of the study
3. we used only the fully completed questionnaires

After a selection made using this criteria’s it resulted a lot of 247 persons with age between 18 and 79 (M = 38,03), 179 (72,47 %) female and 69 (27,53%) male.

Using the DAS we confirmed that the majority of the patients with painful experiences in the past are subject of high or even severe level of anxiety.

RESULTS

The questionnaire carry out by us presents questions with closed answer (yes, no), codified by entering them in statistical analysis charts, done by GraphPad InStat 3 and NCSS software’s.

Out of 247 questioned patients 60 % said that they endured painful dental treatments in the past and also 60 |% said that they during a dental treatment are waiting for the appearance of the pain. For statistical analysis we used the Fisher test and the results showed that is a very significant association between pain in the past and anticipating pain (p< 0,0001) The association is significant both statistically and scientifically to (OR = 3.951, CI = 95%, 2,298 – 6,794) (fig. 1).

After dividing on age groups we observed a extremely significant positive association, both from statistically or scientifically points of view, between pain in the past and
anticipating pain at patients with ages between 18 - 30 (n= 81) years and 41 – 50 (n= 47) years with p=0.0005 (OR = 5.600 95% CI: 2.088 to 15.017), or in case of p=0.0006 (OR = 12 95% CI: 2.685 to 53.636). At patients with ages between 18 and 30 years we could prove statistically significant correlation between anticipating pain and avoiding dental treatment (p=0.0024) (fig. 2).

The statically reading of the results showed that between pain in the past and avoiding dental treatments exists a positive association, but statistical insignificant (p=0.08 OR = 1.74 95% CI: 0.9635 to 3.151). This helped us to conclude that to obtain accurate results we need a larger lot of patients.

**CONCLUSIONS**

In 1984 Wall and Melzack said “Pain always is one-sided. Every individual is learning the signification of this word by the experiences he starts to have from his first years. Without doubts is a sensation with organic origins, but this sensation always is apprehended like an unlike one, which makes from this an emotional experience”

For many patients, fear of dental pain and avoidance of dentistry are synonymous (Freeman, 1991). Moreover, clinicians report that managing some patients’ pain and distress can be a frustrating task (Lindsay, Jackson 1995).

From this lot of patients 60% (n=149) had in the past dental treatments involving pain. This result has to put the practitioners to think how they can avoid pain, because pain could be the starting or the aggravating factor of the dental anxiety.

The high number of patients who had a positive answer to the first question from our questionnaire shows us that practitioners are not giving enough significance to the symptom of pain, resulting an absence of interest in trying to challenge the pain. Between pain in the past and avoiding dental treatments exists a positive association, but to determine the statistically and scientifically magnitude we have to rise the number of questioned patients. We can claim that any pain endured during the dental treatment remains printed in the patients memory, making them to think on possible pain at their following appointment. 73% (n=109) out of the patients who experienced painful dental treatments, are believing that at the next appointment pain can show up again. A number of 40 patients are waiting for pain to show up at their next appointment; even they never experienced painful dental treatments.
This situation is making us to associate pain with the dental treatment.

It often is assumed that aging results in loss of pain sensitivity. Although some efforts have been made to study the effects of aging on pain perceptions, the results are not conclusive. Experimental studies of acute pain responses do not show significant age-related alteration in the pain perceptions of healthy elderly subjects (Harkins et al., 1994). It has been proposed that differences in acute pain responses between younger and older patients (Lash et al., 1997) may be a result of changes in pathophysiology (for example, neural conductivity) rather than changes in the pain perception itself (Harkins et al., 1990; Heft et al., 1996). It is not clear, however, from the literature whether these changes in pathophysiology influence both affective pain and sensory intensity in the elderly.

During our study we observed that patients with age between 18 – 30 years are avoiding dental treatments because of the pain which can show up during the dental treatment. Patient older than 50 years are not avoiding dental treatments. One of the main reasons of this can be that painful experiences are fading during the years in patients memory.

New evidence suggests that there are differences in pain perceptions between men and women (Riley et. al. 1998, Unruh et al. 1999). Although, most studies suggest that women have greater pain sensitivity than men, there are inconsistencies in the literature (Eli et al., 1996). These inconsistencies suggest that the type of pain stimuli may influence perceived pain differences between men and women (Fillingim, 1998). In addition, the influence of aging on these reported sex differences has yet to be clarified.

In our study because of the lower number of questioned male patients we couldn’t determine a precise correlation between pain in the past, anticipating pain and avoiding dental treatments.

Our own experience is showing that the majority of patients are favoring different methods to fight pain showing up during the oral rehabilitation treatments.

Patients avoiding dental treatments usually presents a poor oral health, and at the end they will need elaborate oral rehabilitation treatments.

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REFERENCES:
THE PREVALENCE OF HYPODONTIA IN CHILDREN WITH CLEFT AND NONRELATED CONTROLS

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THE PREVALENCE OF HYPODONTIA IN CHILDREN WITH CLEFT AND NONRELATED CONTROLS (Abstract): The aim of this study was to compare the occurrence of hypodontia, dental age, and asymmetric dental development in children with cleft with a non-sibling control group. The study sample consisted of 30 children with cleft (aged 7.2 to 17.1 years) and 60 controls without cleft (aged between 7 and 18.8 years). Hypodontia, dental age, and asymmetric dental development were assessed on panoramic radiographs of the children with cleft and the control children without cleft. The cleft (p.001) group showed a significantly higher frequency of hypodontia and a significantly higher occurrence (cleft p.01) of asymmetric dental development, compared with the control group. Only a small, but insignificant delay in dental development could be found in the cleft group. The cleft subjects showed a significantly higher occurrence of hypodontia and asymmetric dental development than the non-cleft control group. This may suggest a genetic component for the occurrence of hypodontia and asymmetric dental development.

Keywords: cleft, hypodontia, tooth formation

INTRODUCTION

Some dental traits such as hypodontia, supernumerary teeth, peg-shaped teeth, dental delay and dental asymmetry occur with higher frequency in individuals affected with cleft lip, cleft palate, or both (Ranta, 1986). The literature includes a large number of studies dealing with tooth formation in patients with cleft with a range of findings. Several studies report a delayed formation of the permanent teeth (Bailit et al., 1968; Ranta, 1972, 1982; Harris and Hullings, 1990; Brouwers and Kuipers-Jagtman, 1991). Other studies report only a delayed dental development in boys until the age of 9 years (Prahl-Andersen, 1978; Prahl-Andersen et al., 1979). In the study of Loevy and Aduss (1988), early development in boys with clefts was observed. Left-to-right differences in tooth formation are also greater in children with cleft (Ranta 1973; Harris and Hullings, 1990). The incidence of hypodontia away from the cleft area in individuals is also markedly increased as compared with the population without cleft (Haataja et al., 1971; Ranta, 1986; Jiroutova and Müllerova, 1994). In particular, hypodontia most frequently involves the second premolars in the upper and lower jaw and the upper lateral incisor on the noncleft side (Ranta, 1986).

Some studies (Jordan et al., 1966; Schroeder and Green, 1975) report an increase in dental aberrations such as abnormal shape of teeth and supernumerary or missing teeth in siblings of children with cleft, compared with the general population.

However, these studies were only descriptive with little statistical analysis and in the meantime the dental age was not investigated. Investigations of Adams and Niswander (1967) and Bhatia (1972) support the idea that the same etiological factors that cause the formation of the cleft can affect the development of the dentition. Significant associations of
some patients with cleft lip and palate with tranforming growth factor alpha and retinoic acid receptor loci (Chevenix-Trench et al., 1992) were found.

Since there are few studies on children with a cleft, the aim of the present study was to compare hypodontia, dental delay, and asymmetric dental development in children affected with cleft lip or palate with a group of control children.

MATERIALS AND METHODS

Sample Selection:

The cleft group consisted of 30 children (20 girls and 10 boys), aged 7 years 2 months to 17 years 1 month (mean age 10 years 2 months). All were of Caucasian origin with nonsyndromic clefting. Twenty of these children had a complete cleft lip and palate, 6 children showed an isolated cleft palate, and only 4 children had a cleft lip with cleft alveolar process. They were all enrolled for treatment at the Department of Orthodontics at the University of Medicine and Pharmacy "Iuliu Hatieganu” Cluj-Napoca, Romania. The nonsibling control group consisted of 60 children (40 girls and 20 boys) whose age ranged from 7 years to 18 years 9 months (mean age 11 years 3 months). At the time of the orthopantomogram, none had been treated orthodontically. The children of the non-cleft sibling and control groups were of Caucasian origin and were nonsyndromic.

Method:

An orthopantomogram was taken of each child to assess the frequency of hypodontia and the dental maturation (dental age). The sample for evaluating the frequency of hypodontia consisted of 30 children with cleft.

Dental age was calculated using the method of Demirjian and Goldstein (1976). A computer system and individual data sheets were used to train the evaluators in scoring the stages of development correctly and consistently. Individual radiologic appearances of the seven permanent teeth on the left side of the mandible were evaluated according to developmental criteria. Development of each tooth was categorized into one of eight stages. These individual scores were entered into a clinical evaluation program, which converted them, depending on the sex of the child, into a maturation and dental age score. Panoramic X-rays, which showed a full maturation score, or bilateral agenesis or extraction of at least one tooth in the lower jaw were excluded. Thus the final sample for evaluating the dental development consisted of 30 children affected with namely 20 with cleft lip and palate, 6 with a cleft palate, and 4 with a cleft lip and alveolus. In order to assess the reliability of this method, the scores of 30 children were measured twice with an interval of 1 month by two examiners as a pilot study.

To investigate the symmetry of permanent tooth formation, individual tooth developmental stages of seven left and right mandibular teeth were compared. A pair of teeth was regarded as having undergone asymmetrical development when the tooth development stage of the left tooth deviated from that of the antimeric tooth by at least one developmental stage.

The panoramic X-rays were also studied for congenitally missing teeth outside the cleft region (excluding the lateral incisor in the upper jaw on the cleft side). A tooth germ was considered to be congenitally missing if it was absent on the X-ray, although the child’s age would have supported its being radiographically detectable (Haavikko, 1970). The presence of the preceding deciduous tooth was in most cases a supporting criterion for the diagnosis of
hypodontia. When the deciduous tooth was missing, the patient’s file was reviewed and the patient was interviewed in order to exclude the possibility of an extraction.

All data were transferred to Microsoft Excel 97 (Microsoft Corporation, Redmond, Washington) for statistical analysis.

For each patient, missing teeth, the difference between dental and chronological age, the dental delay compared with the controls as well as the asymmetry of dental development were assessed.

For each group (cleft group and control group), the means and the standard deviations of dental age, chronological age, differences between dental and chronological age and dental delay of the cleft compared with the controls were calculated. Differences between the groups were analyzed using the unpaired t test and the F test for equality of variances. The chi-square test was used in order to test differences (frequency) in hypodontia and dental asymmetry among the two groups.

Probabilities less than .05 were considered to be statistically significant.

**RESULTS**

**Error of Method:**

No statistically significant differences were found between the means of the intra- and interobserver set of measurements. The intraobserver measurements yielded a correlation of 0.988, which was almost equal to the correlation of the interobserver measurements: 0.994. The measurement error for the dental age was at most one developmental stage.

**Hypodontia:**

In the group of 30 children with cleft, 15 children (50%) showed hypodontia of one or more teeth outside the cleft region. A total of 17 teeth were absent (upper/lower jaw 10/7). In the control group of 60 children, 6 children (10%) showed hypodontia of one or more teeth. A total of 9 teeth were absent (upper/lower jaw 6/3). Compared with the nonsibling controls, the cleft group showed a highly significant increase in frequency of hypodontia ($p < .001$).

Hypodontia involved mostly the second premolars of the upper and lower jaw and the upper lateral incisor on the contralateral side to the cleft. The most frequently missing teeth in all the groups were the second premolars. No significant difference in hypodontia between the upper and lower jaw or any significant sex differences were found.

**Comparison of the Dental and Chronological Age:**

The cleft group had a mean dental age of 10.2 years, which was 0.25 years (3 months) greater than the mean chronological age of 9.11 years of this group. The control group showed a mean dental age of 11.3 years, which was 0.3 years (4 months) older than the mean chronological age of 10.11 years.

**Asymmetric Tooth Formation:**

In the group of 30 cleft children, 25 (50%) were found to have one or more asymmetrically developing pair of teeth and in the control group, 17 of 60 children (28.33%) showed asymmetric tooth development. The cleft group showed significantly more asymmetrical dental formation, compared with the control group (chi-square: cleft-control $p < .01$). In each group, the premolars most frequently exhibited asymmetric development.

**DISCUSSION**

The aim of this study was to compare dental development among a cleft and a control
group. Sample size precluded comparison of scores for different cleft types, which would also influence results.

In the cleft group, some of the children had been treated orthodontically. According to Fanning (1962), orthodontic treatment can influence the eruption but not the root formation of the teeth. Teeth close to the cleft are likely to have various malformations because of some additional environmental factors (Ranta, 1986). Since this study was interested in the genetic issues in hypodontia of children with cleft, we excluded hypodontia in the cleft area.

The most frequently missing teeth on the noncleft side were the premolars and the maxillary lateral incisor. This is in agreement with Ranta (1986). Our findings show a certain gradation in frequency of hypodontia among the two groups: the cleft group shows the highest frequency of hypodontia outside the cleft region (34.5%), followed by the control group (22.6%). This frequency of hypodontia outside the cleft region is in accordance with previous studies (Weise and Erdmann: 1967; 28% in unilateral cleft lip and palate, 17.9% in bilateral cleft lip and palate; Ranta 1983: 31.5% in isolated cleft palate). Concerning the dental development, we preferred to use the method of Demirjian and Goldstein (1976), which uses the teeth of the lower jaw so that local (environmental) factors such as surgical trauma are excluded. We found no significant differences in mean (dental-chronological) age among the two groups. Compared with the controls, the cleft groups show an insignificant mean relative dental delay. Ranta (1986) estimated the delay in tooth formation to vary from 0.3 years to 0.7 years according to the severity of the cleft and the hypodontia. Tooth formation was delayed longer in the more severe cleft cases and in the subgroups with severe hypodontia. This is in agreement with the mean dental delay of 0.2 years reported in this study. With the method of Demirjian and Goldstein, however, we were not able to assess dental age in cases of multiple missing teeth, which were often severe cleft cases.

Concerning the dental age assessment, a consistent overestimation of 3.5 months was found in all groups using the method of Demirjian and Goldstein. This confirms the results of other studies, which found an overestimation from 6 to 10 months with Demirjian and Goldstein’s method (Hagg and Matson, 1985; Staaf et al., 1991). Given this consistent overestimation in all groups (greater overestimation in the control group than in the cleft group), one could wonder whether the cleft group are really as different as results indicate.

No gender difference could be discovered with Demirjian and Goldstein’s method because the conversion of the maturity score into a dental age is dependent on the sex.

Significant differences were found in the frequency of asymmetric dental development between the cleft group and the control group. This agrees with the results of several other studies that found a significantly higher frequency of asymmetric dental development in children with cleft (Ranta, 1973, 1986). We should be careful with these results, given the reliability of the method (useable within one development stage).

**CONCLUSIONS**

The cleft group showed findings which were significantly different from the control individuals. The children with cleft demonstrated a significantly higher frequency of hypodontia and a significantly higher frequency of dental asymmetries together with a small but nonsignificant mean dental delay relative to controls without cleft. The results of this study suggest that some genetic factors for clefting and tooth development have some relationship.
REFERENCES
EXPERIMENTAL TREATMENT INVOLVING APITHERAPY IN HEREDITARY HEMOLYTIC ANEMIA

Calin Vasile ANDRITOIU, Vasile ANDRITOIU, Gabriela Ildiko ZONDA, Liliana FOIA, Mihai CARLAN, Marcel COSTULEANU

EXPERIMENTAL TREATMENT INVOLVING APITHERAPY IN HEREDITARY HEMOLYTIC ANEMIA (Abstract): Hemolytic anemia is a form of anemia in which red blood cells are destroyed and removed from the bloodstream before their usual lifespan is up. Anemia appears because the red blood cells are destroyed faster than the bone marrow can produce them. The etiology of premature erythrocyte destruction is diverse and can be due to conditions such as intrinsic membrane defects (hereditary spherocytosis, hereditary elliptocytosis), abnormal hemoglobins (sickle cell disease, thalassemia), erythrocyte enzymatic defects (G-6-PD deficiency, pyruvate kinase deficiency), immune destruction of erythrocytes, mechanical injury, and hypersplenism. Intrinsic hemolytic anemias are often inherited; these conditions produce red blood cells that do not live as long as normal red blood cells. Classical treatment of hereditary hemolytic anemia consists of corticosteroids, splenectomy, immunosuppressive drugs or plasmapheresis. The purpose of our study was to assess the effects of an experimental apitherapy treatment on a batch of mutant mice with hereditary hemolytic anemia.

Keywords: apitherapy, hereditary hemolytic anemia, honey, pollen

INTRODUCTION

Hemolytic anemia is a form of anemia in which red blood cells are destroyed and removed from the bloodstream before their usual lifespan is up. Anemia appears because the red blood cells are destroyed faster than the bone marrow can produce them. There are two types of hemolytic anemia: intrinsic - the destruction of the red blood cells due to a defect within the red blood cells themselves and extrinsic - red blood cells are produced healthy but are later destroyed by becoming trapped in the spleen, destroyed by infection, or destroyed from drugs that can affect red blood cells [1].

The etiology of premature erythrocyte destruction is diverse and can be due to conditions such as intrinsic membrane defects (hereditary spherocytosis, hereditary elliptocytosis), abnormal hemoglobins (sickle cell disease, thalassemia), erythrocyte enzymatic defects (G-6-PD deficiency, pyruvate kinase deficiency), immune destruction of erythrocytes, mechanical injury, and hypersplenism. Hemolysis is associated with a release of hemoglobin and lactic acid dehydrogenase (LDH). An increase in indirect bilirubin and urobilinogen is derived from released hemoglobin [2].

Some of the causes of extrinsic hemolytic anemia, also called autoimmune hemolytic anemia are: infections (hepatitis, cytomegalovirus (CMV), Epstein-Barr virus (EBV), typhoid fever, E. coli (escherichia coli), or streptococcus), medications (penicillin, antimalaria medications, sulfa medications, or acetaminophen), leukemia or lymphoma, autoimmune disorders (systemic lupus erythematos, rheumatoid arthritis, Wiskott-Aldrich syndrome, or ulcerative colitis), various tumors. Some types of extrinsic hemolytic anemia are temporary and resolve over several months. Other types can become chronic with periods of remissions...
Intrinsic hemolytic anemias are often inherited, such as sickle cell anemia and thalassemia. These conditions produce red blood cells that do not live as long as normal red blood cells [3].

If symptoms are mild or if destruction of red blood cells seems to be slowing on its own, no treatment is needed. If red blood cell destruction is worsening, corticosteroids are usually the first choice for treatment. High doses are used at first, followed by a gradual tapering of the dose over many weeks or months. When there is no response to corticosteroids or when the corticosteroid causes intolerable side effects, splenectomy is often the next treatment. When destruction of red blood cells persists after removal of the spleen or when surgery cannot be performed, immunosuppressive drugs, such as cyclophosphamide or azathioprine, are used. Also, plasmapheresis is occasionally helpful when other treatments fail. When red blood cell destruction is severe, transfusions are sometimes needed, but they do not treat the cause of the anemia and provide only temporary relief [4].

Apitherapy is the use of products from the bee to promote health and healing. Also, standard type preparations have been developed and they are recognized as food supplements or medicines. The therapeutic effects of the bee products on anemia have been previously studied by Russian researchers in the ‘70s, with promising results [5]. Our study represents a bold experiment in which we tried to treat hereditary hemolytic anemia using an original apitherapic protocol.

Other conditions on which bee products have favorable effects are: chronic viral hepatitis (hepatitic virus B and C), even cirrhosis, female, male and couple sterility, autoimmune diseases, uterine fibromas and cists [6,7]. These results were attained in Apiregya Imunooastim private practice.

The main bee products used for apitherapy are honey, pollen, bee bread, apilarnil, royal jelly, propolis and beeswax.

**Honey** is a sweet, semi-fluid, viscous substance made from nectar/manna. It contains: sugars (sucrose, fructose, glucose, maltose etc.), minerals (Fe, Ca, Mg etc), organic acids (acetic, butyric, gluconic, citric, formic, lactic, maleic, malic, oxalic, pyrogulatamic, succinic, glycolic, 2,3 phosphoglyceric, α cetoglutaric, piruvic, tartric), vitamins (B1, B2, B3, B5, B6, B9, B12, C, provitamin A, D, E, K), pigments, aromatic substances, antibiotics (inhibine), antigerminative factors, enzymes (distase, invertase, sucrase, catalase, α and β amylase, peroxydase, superoxidx dismutase, superoxidx oxidoreductase, α and β glucosidase, tyrosinase), hormones, amino-acids (lysine, hystidine, treonine, arginine, valne, serine, methionine, glutamic acid, phenylalanine, tryptophane, prolyne, glycine, tyrosine, norleucine), fatty acids (palmitic, stearic, linoleic, oleic, lauric, miristoleic, linolenic).

**Royal jelly** is produced in the glands of worker bees and is a complex mixture of glandular secretion and honey with a 1:1.7 ratio. It is the most valuable substance known by biochemistry, pharmacology and medicine. Its chemical composition includes: proteins, glucides, gammaglobulin, gelatine, 10-hydroxi-2-decenico acid with antitumoral properties, 9-hydroxidecenoic acid, formic, tartaric, citric, acetic, butyric acid, hydrosoluble and liposoluble vitamins and a vitaminic substance which prevents aging. Also, it contains all the minerals found in pollen and honey, enzymes, hormones, antibiotic, bactericide and antiviral substances. It has energizing effects, stimulates cellular regeneration, the enzyme system and hematopoiesis; it also has antioxidant, immunomodulating, hepatoprotector, remineralizing, antianemic, antileucemic and antitumoral properties.
Apilarnil is a triturate of drone larvae which includes the specific food content of the larvae cells (honey, bee bread, glandular secretions of the nurse bees). Apilarnil contains proteins (9-12%), glucesides, lipids, hydrosoluble and liposoluble vitamins, minerals, enzymes, hormones, antiviral substances. It has antianemic, antileucemic, biostimulant, immunomodulating, energizing properties and stimulates cell regeneration [7].

Pollen is the male element of the flowers. It contains nourishing and biostimulating substances: enzymes, hormones, growth factors, reducer sugars (polein, fructose), non-reducer sugars, azotate compounds (xantine, hypoxantine, geranine, trimethylene), lipids, organic acids (citric, tartaric, malic, malonic, succinic, acetic, fumaric, α ceto-glutamic), proteins, essential amino-acids, liposoluble vitamins (A, D, E, K), B vitamins complex, C vitamin, minerals (calcium iron, magnesium, zync), ribose, dezyroribose, pectine, pigments (rutine, which increases the resistance of the capilaries), inositol, enzymes (amylase, invertase, protease, lipase, phosphatase, catalase, lactase). It stimulates cellular regeneration, hematopoiesis and capillary blood flow and has antioxidant, antianemic and antileuemaker effects.

Bee bread has a therapeutic value ten times higher than pollen. It is an outstanding biostimulant [8].

Propolis is a resinous substance collected by the bees from plants and trees and is used to coat the inside of the beehive and the honeycomb cells with an antiseptic layer. It is a combination between plant and bee glandular secretions. It contains resins and balms, volatile oils, aliphatic acids, aliphatic acid sterols, vitamins, minerals, amino-acids, enzymes, flavonoids. It has antioxidant, phosphorilating, antitumoral, antileucemic, antianemic and immunostimulating properties [7,8].

MATERIAL AND METHOD

We conducted our study on a batch of 4 mutant mice with hereditary hemolytic anemia. Based on the physiopathologic mechanisms we developed an experimental therapeutic protocol based on bee products. All products used were provided by “Stupina” and are approved by the Institute of Bioresources of Bucharest.

According to the protocol, mutant mice were given the following apitherapics: “Vestala”, “Centaurus I”, „Centaurus II”, pollen (“Polen – Prisaca”) and honey – 10 g in three doses per day. Also the batch food included olive oil (approximately 5 ml per day, depending on the mice tolerance), vegetal extracts as powder (Ribes Nigrum, Apium graveolens, Petroselinum crispum, Beta vulgaris, Armoracia rusticana) or infusion (Calendula officinalis, Lamium Album, Equisetum arvense/E. maxima, Basilici herba, Juglans regia folium, Serpylli herba, Rosa canina, Trigonella foenum graecum). All alimentary products containing potassium were excluded from the mice diet; also, we opted for a low sodium diet.

RESULTS

Our experimental apitherapeutic protocol resulted in an increase of the survival period from 2 weeks (the mice were assumed to be in terminal phase) to 7 month for 50% of the batch (2 mice), to 10 month for 25% (1 mouse) and 11 month for the remaining 25% (a mouse).
DISCUSSION AND CONCLUSIONS

Because hereditary hemolytic anemias are due to some innate defects of one of the three main components of the red blood cells, including the enzyme equipment, we administered the “Polen – Prisaca” product for its tremendous enzyme variety and its content rich in essential amino-acids.

It is known that hereditary spherocytosis is due to a erythrocyte membrane protein defect which results in alteration of the surface/volume ratio. Given the fact that erythrocyte hemolysis is prevented by glucose addition, we administered to he study batch 10 g of honey in three portions daily. It is known that the circulating mature erythrocyte has a relatively simple intermediary metabolism due to its modest metabolic needs (approximately 10% of the glucose consumed by erytrocytes is metabolized by hexozomonophosphate shunt).

Also, in hereditary hemolytic anemia pathogeny is implicated a molecular anomaly which affects the cytoskeleton proteins, mainly those responsible for stabilizing of the lipid double layer. In order to compensate this defect we administered olive oil mixed in the daily diet, adjusting the dose according to the subject tolerance.

The efficiency of the “Stupina” apitherapeutic products was acknowledged by this study conducted in “Gr.T. Popá” University of Medicine and Pharmacy of Iasi biobase, within the Physiopathology Department.

The results obtained with the experimental model for hereditary hemolytic anemia, represented by the important increase of the survival of the mutant mice, suggests a potentially efficient therapeutic protocol for hereditary hemolytic anemia. This first success imposes the continuation of this study with the support of laboratory analyses specific for diagnosis of hemolytic anemia and treatment follow-up.

REFERENCES
KNOWLEDGE AND ATTITUDES TOWARDS ORAL HEALTH AMONG PARENTS AND TEACHERS IN IASSY, ROMANIA

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KNOWLEDGE AND ATTITUDES TOWARDS ORAL HEALTH AMONG PARENTS AND TEACHERS IN IASSY, ROMANIA (Abstract): The objectives of our study were: (1) assessing knowledge level and attitudes towards oral health among children’s mothers and teachers; (2) analyzing oral health care habits of mothers in relation to socio-economic status (SES); (3) evaluation of the impact of an educational program for parents and teachers in Iassy, Romania. Material and methods. The authors initiated in 2004 a two-year longitudinal, questionnaire-based study which included 375 mothers of 9-11 years old school children and 103 school teachers from 18 schools in Iassy. The subjects' knowledge level and attitudes towards oral health were reevaluated in 2006. Data were analyzed using the Statistica program, ANOVA, Scheffe, Pearson, Chi -square, and Gamma tests (p<0,05). Results. The level of knowledge and attitudes towards the factors incriminated in dental decay development was significantly higher in teachers compared to mothers. The educational program resulted in an increased number of mothers' positive answers referring to the role of sugar consumption in the dental decay (from 50,2%, in 2004 to 59,7%, in 2006 ), the role of fluoride and tooth brushing in preventing dental decay (from 58,2% to 64,2% and, respectively, from 90,8% to 95,7%) (p<0,05). Conclusions. The findings of this study revealed a positive relationship between mothers' SES and the level of knowledge and attitudes towards oral health. The impact of the oral health education program was positive and resulted in improved oral health care knowledge and attitudes of mothers and teachers.

INTRODUCTION
The objectives of our study were: (1) assessing knowledge level and attitudes towards oral health among children's mothers and teachers; (2) analyzing oral health care habits of mothers in relation to socio-economic status (SES); (3) evaluation of the impact of an educational program for parents and teachers in Iasi, Romania.

MATERIAL AND METHODS
The authors initiated in 2004 a two-year longitudinal, questionnaire-based study which included 375 mothers of 9-11 years old school children and 103 school teachers from 18 schools in Iasi. The subjects received two types of self-administered questionnaires (validated by Petersen P.E., 1992), regarding oral health knowledge and attitudes. Mothers and teachers were then subjected to an oral health educational program using a variety of educational tools and methods (interactive lessons on selected topics, demonstrations, printed educational materials, videos and slides and media campaigns). The subjects' knowledge level and attitudes towards oral health were reevaluated in 2006. Data were analyzed using the Statistica program, ANOVA, Scheffe, Pearson, Chi -square, Kendall tau and Gamma tests (p0,05).
RESULTS

The response rates in mothers' group were 92% and 86%, respectively, and in teachers' group there were 92% and 90%, respectively, for the year 2004 and 2006. (p<0.05). Depending on SES and educational level, there were found significant differences (p<0.05) in mothers' group regarding the frequency of dental brushing in children. The lower SES group encouraged seldom tooth brushing for their children in 2004 but recommended a daily brushing after the initiation of the program focused on dental health education. The level of knowledge and attitudes towards the factors incriminated in dental decay development was significantly higher in teachers compared to mothers. The educational program resulted in an increased number of mothers' positive answers referring to the role of sugar consumption in the dental decay (from 50.2% to 59.7%, in 2004 to 2006 ) (fig. 1, 2), the role of fluoride and tooth brushing in preventing dental decay (from 58.2% to 64.2% and, respectively, from 90.8% to 95.7%) (p<0.05) (fig. 3).

Figure 1. Mothers and teachers opinions about tooth decay etiology

Initial data from 1993 showed that 39% mothers and 26% teachers thought sugar produces tooth decay (Danila, Hanganu, 2003). After 10 years, in 2003, there is a big improvement: 30% increase of positive answers. In 2004, 50% mothers and 71.5% teachers recognized sugar impact and in 2006 we found a 10% increase for the mothers group. Teachers had a tendency of improving nutrition hygiene informations. Sugar incrimination in tooth decay etiology is considered by the teachers group gradually, from 1993 until 2006 (Danila, Petersen, 2003). In 2003, both mothers and teachers (60 % each) believed that bacteria are responsible for tooth decay and in 2006, 70% of teachers gave positive answers referring to...
Comparing mothers and teachers answers regarding tooth brushing importance with children opinions, there is a great difference between the knowledge level and the practical habits. Tooth brushing impact is considered of major importance in promoting oral health (figure 4).
DISCUSSIONS

Oral hygiene lessons and practical demonstrations are more useful for knowledge improvement, attitudes and behavior changes in oral health, the major goal being the increase of quality of life. Meetings the dentist in schools are very important for all categories and social levels, being an important source of information and knowledge regarding oral health (Green, 1988). Three years of oral health education programme had a big impact on behaviors and attitudes of children and teachers for a healthier lifestyle.

The more parents are informed about oral hygiene, the less mean tooth decay index is, so information and education are important factors for oral health improvement (Davies, 2005). In order to maintain oral health in early ages, primary dentistry care is very important, because tooth decay initiation and extent are the main predictors for decays in the permanent dentition. In order to have a successful educational program, it is mandatory to start by educate parents and teachers, the ones who build opinions (Petersen, 1995).

CONCLUSIONS

1. The findings of this study revealed a positive relationship between mothers' SES and the level of knowledge and attitudes towards oral health.

2. The impact of the oral health education program was positive and resulted in improved oral health care knowledge and attitudes of mothers and teachers.

REFERENCES


INTRODUCING A NEW CONCEPT IN DENTISTS’ CURRICULA: MANAGEMENT OF NICOTINE DEPENDENCE IN SMOKERS WITH ORAL DISEASES

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INTRODUCING A NEW CONCEPT IN DENTISTS’ CURRICULA: MANAGEMENT OF NICOTINE DEPENDENCE IN SMOKERS WITH ORAL DISEASES (Abstract): Most people are now aware that smoking is bad for health. It can cause many different medical problems and, in some cases, fatal diseases. However, many people don’t realize the damage that smoking does to their mouth, gums and teeth. Smoking can lead to tooth staining, gum disease, tooth loss, bad breath, enable efficiency of periodontal treatment or dental implants and induces oral cancer.

As for any other disease, diagnosis of tobacco use must be followed by treatment, which is entitled advice/counselling to quit smoking and has two major components: pharmacological methods and cognitive-behavioural approach, optionally adding psychotherapy, hypnosis, self-helping written materials, support qui lines. Quitting smoking is a difficult process, as nicotine dependence is difficult to treat. Only 3-5% of smokers achieve tobacco use abstinence based on own will; majority of the cases need expert medical advice, therapy and counselling. For this purpose, this paper is giving some basic landmarks to help improving quality of medical services delivered by dentists to this category of patients.

Keywords: oral diseases, smoking, therapy of nicotine dependence

INTRODUCTION

Over one third of Romanians are daily smokers, in fact 36%, according to last national statistics [1]. Smoking is proved to be a risk factor for human health, and chronic tobacco consumption (tobacco dependence or nicotine dependence), considered as a mental and behavioural disorder, is classified as a disease by World Health Organization and many other professional medical bodies, such as American Psychiatric Association. In the same time, smoking is a major public health problem, due to consequent morbidity and mortality, especially when this has a perfectly avoidable cause, but also when thinking of social and psycho-behavioural implication of smoking habit. Although an individual „option”, smoking determines physical and psychological addiction due to nicotine compound in tobacco smoke and has both personal and population impact in the society, modifying environment where smokers live [2].

Besides well known role of tobacco exposure in developing cancers, chronic obstructive pulmonary disease (COPD), cardio-vascular diseases, sudden death, cataract, respiratory infections, gastric ulcer, etc., smoking is favourable to premature birth, low-weight new-borns and other negative consequences if smoking during pregnancy, but also smoking has a negative impact on oral health.

Spectrum of smoking induced oral pathology is quite wide: nicotinic stomatitis (smoker’s palate), periodontal disease, leukoplakia, focal gingival recessions with periodontal
attachment loss, acute necrotizing ulcerative gingivitis (ANUG), chronic hyperplasic candidosis, median rhomboid glossitis, black hairy tongue, lichen planus, dental caries, tooth loss, leukoedema.

Overview of literature in the field has revealed solid data about active noxious role of tobacco smoke on oral pathology [3,4]. Exposure to tobacco smoke has been shown to have a negative influence on dental implants, immunological status of the oral mucosa, teeth status and aspect(hialitosis, bad breath, gingival recession, dental plaques, yellow teeth, dental calculus, are quoted) [4].

Quitting smoking is a difficult process, as nicotine dependence is difficult to treat. Only 3-5% of smokers achieve tobacco use abstinence based on own will; majority of the cases need expert medical advice, therapy and counselling. So far, most of smokers-patients of dentists in Romania are not yet aware of benefits of stopping smoking to their oral illnesses. For this purpose, this paper is giving some basic landmarks to help improving quality of medical services delivered by dentists to this category of patients.

In order to attend this goal, we need to define smoking status, degree of tobacco consumption and nicotine dependence score. These are tools to diagnosis the disease taken in charge- tobacco dependence, nicotine dependence or chronic tobacco consumption. As for any other disease, diagnosis must be followed by treatment, which is entitled advice/counselling to quit smoking and has two major components: pharmacological methods and cognitive-behavioural approach, adding or not psychotherapy, hypnosis, self-helping written materials, support quit lines, etc.

For those less familiar with this recently developed field of pulmonology in Romania, we highlight the fact that tobacco/nicotine dependence has to be declared, when diagnosed on the medical records of the patients, as it has been certified and codified ICD 10-Romanian code J 13, by the National Insurance Romanian System, in the past 2 years.

**CLINICAL DIAGNOSIS OF NICOTINE DEPENDENCE**
**(EVALUATING SMOKERS)**

Smoking status, assessed as international guidelines recommend, is linking the term „smoker” to a consumption of minimum 100* cigarettes during a lifetime or at least 100 grams tobacco, when another tobacco product is preferred (pipe, water-pipe). Usually definition of smoking status is referred to cigarette intake. W.H.O. is classifying people’s attitude towards smoking in several categories, but we will copy bellow only the most important ones, useful for dentists in their current practice. Classification is based on answers to a standard questionnaire on duration, amount and personal characteristics of smoking [5].

Some questions are mandatory as: did you ever smoke?; how many cigarettes were: more or less than 100?; do you smoke daily (how many cigarettes?/since when?), weekly?, on special occasions? Interpretation of these questionnaires allows definition of:

- **smokers**: subjects that smoke at the moment when they answer to the questionnaire. These ones are divided into:
  a) **daily smokers**: smoke at least once daily, every day-including people who don’t smoke on Sundays because of religious interdictions;
  b) **occasional smokers**: smoke some days daily, but not every day

- **no smokers** subjects that do not smoke at the moment when they answer the questionnaire. These ones are divided into:
a) never smokers (he never smoked or just experimented no more than 100 cigarettes/lifetime),

b) former daily smoker (he used to smoke daily, but now he does not smoke),

c) former occasional smoker (he used to smoke at occasions and now he does not smoke).

In practice, currently is used the notion of packs – years (PA)**, a very good instrument, which corroborated with the result of obtained score at Fagerstrom - Nadjari test for nicotine dependence (see below), helps us in choosing the best indication of treatment to quit smoking.

*100 of cigarettes equivalent to 100 grams of tobacco (useful for that persons that smoke pipe or other tobacco products than cigarette)

** result of number of packs smoked/ per day X number of years of smoking = number of packs years. For example: a person who smokes 12 cigarettes per day over 18 years, has a consumption of 12/20 x 18 = 30 packs years (30 PA)

As previously mentioned, in time, tobacco use is inducing dependence, for which nicotine is responsible, as a constant tobacco compound to be found in any tobacco product on the market. Positive stimulatory and satisfactory rewarding mechanism is developed in the brain, where nicotine reaches, as delivered to the human body through tobacco smoke [6]. This is explanatory also for the compulsive necessity to receive tobacco and vice versa for the apparition of the withdrawal symptoms to nicotine, when tobacco smoking is stopped [7,9]. American Association of Psychiatrists catalogued nicotine in Diagnostic and Statistical Manual of Mental Health Disorders” [8] as an addictive substance with similar properties as morphine and cocaine. Taking into consideration international classification of the diseases accepted by W.H.O., nicotine is fulfilling all addictive drugs criteria such as: self administration in experience animals, increasing satisfaction following consumption, continuing substance use despite negative effects, relapse (take back consumption) after abstinence, developing tolerance and physical and psychological dependence [7,8]. The severity of nicotine dependence is different from case to case and this can be quantizing [10] by Fagerstrom - Nadjari Test for Nicotine Dependence here below:

1. How many cigarettes per day do you smoke?
   ( < 15 = 0 / 15 - 20 = 1 / > 25 = 2).
2. Do you inhale smoke?
   ( never = 0 / sometimes = 1 / always = 2).
3. Do you smoke usually more cigarettes sequentially after few hours of abstinence?
   (Yes = 1 / No = 0).
4. Which cigarette is the best?
   (First = 1 / Any other = 0)
5. What brand of cigarettes do you smoke? (nicotine level)
   ( < 0,8 mg = 0 / 0,8 – 1,5 mg = 1 / > 1,5mg = 2
6. How soon after waking do you smoke first cigarette?
   In first half hour of wakening = 1 / later = 0.
7. Do you smoke more in the morning than during the rest of the day?
   Yes = 1 / No = 0.
8. Do you find it difficult to refrain from smoking in places where it is forbidden? (church ...)-
   (Yes = 1 / No = 0).
9. Do you smoke when you are so ill that you are in bed?
10. Do you smoke when you need to concentrate?
   (Yes =1 /No =0).

RESULTS

Low Nicotine Dependence - 0 to 3 points; Medium Nicotine Dependence - 4 to 5 points;
High Nicotine Dependence - 6 to 10 points; Very High Nicotine Dependence> 10 points. The
score allows a better choice of therapeutic indication to stop smoking.

Biological (laboratory) diagnosis of nicotine dependence

Exposure of the human body to tobacco smoke is objectively proved by biological markers
such as: serum, urine, saliva or hair levels of cotinine, a substance produced as a result of
metabolic turn-over of nicotine. Beside cotinine there is also carbon monoxide in the tobacco
smoke which concentrations can be assessed in exhaled air of smokers, as the second
important marker to determine recent tobacco use. Biomarkers are valuable in follow-up of
patients undergoing therapy to quit smoking. Using such “detectors” of smoking traces,
patients will know that declaration of abstinence can be verified, will become more conscious
and more seriously involved in the process of stopping smoking. Salivary cotinine’s impact
was analysed in few studies- two of these being more relevant, as higher concentrations of
nicotine’s metabolite were found in smokers vs. ex-smokers vs. non smokers but also direct
proportionality between these concentrations and number of cigarettes smoked & number of
years of smoking were revealed. It is absent in the salivary secretion only after 7 days after
tobacco use, and that makes it the most reliable indicator of stopping smoking [11].

Measuring urinary cotinine is a standard routine test to objectively show smoking status of
individuals. It persists in the urine 2-4 days after tobacco use [12]. Serum cotinine is used
mainly to show passive tobacco smoke exposure (exposure to smoking by others [12].

Determining CO in exhaled air helps proving recent smoking and is done with simple and easy
to handle equipment, smoke-check test (smokerlyzer test) (fig.1) inviting the subject to
take a deep breath, than to perform a long exhalation in this testing CO machine. On the
monitor of the smokerlyzer, concentrations of CO will be displayed, therefore, both the doctor
and the patient will see “the truth” about smoking status.

Figure 1. Smokerlyzer

Therapy of Nicotine Dependence

Medical assistance to a smoker it has been gradually developed, as a branch of
pneumology in Romania after 2000.While intensive counselling to quit smoking belongs to
pulmonologists, brief advice represents a simple, elementary medical gesture, mandatory for
every health professional, from G.P.-s, to obstetricians, nurses, dentists, pharmacists,
surgeons, internal medicine practitionners, etc. Brief advice is cheap and cost-efficient; it
takes 3-5 minutes only and consists of a sum of verbal indications to motivate quitting smoking. Counselling to quit smoking as it is delivered by pulmonologists, is made of cognitive-behavioural support in context of tobacco smoking disease particularities and prescription of pharmacological or non pharmacological therapy. There is a huge deficit of experts and plenty of people address our centres, making impossible for the moment to solve all these requests. As in other medicine domains, the lack of specialised services to provide smoking cessation is no exception for dentist care. Dentists can find useful a short overview of therapeutic tools to address their patients.

**Methods to quit smoking-short classification.**

Generally, stopping smoking presumes a complex of therapeutically measures like: to prescribe drugs, interventions of specific counselling, behavioural methods, adjuvants - acupuncture, hypnosis, or more complex methods group–therapy, support on telephone line, programs on profile’s web. Spectrum of medication is ample, from nicotinic substituents, bupropion, varenicline, mecamylamine, silver acetate, glucose, antidepressants like nortriptylin, clonidine, rimonabant or nicotine vaccine [10].

**Methods to quit smoking available in Romania**

After a long period of “austerity”, finally, year 2007 brought us new medication in our area of nicotine dependence pharmacotherapy until then. So in present we can find in our pharmacies Bupropion and Varenicline, but also 3 variants of nicotinic substitutes: nicotine gum (concentration of 2 or 4 mg) and also nicotinic patch: variant of 15 mg.

Nicotinic substitutes are a logical solution: the body continues to receive the NICOTINE, but from another source, Bupropion, in use since 1997, an antidepressant which intervenes upon the neurological circuits involved in the nicotine addiction process and Varenicline, the newest medicine, decreases the craving to smoke and diminishes the symptoms due to syndrome withdrawal., due to affinity for nicotinic receptor α4β2, thus agonist – stimulation of partial release and antagonist - prevents stimulation of nicotinic receptor by the nicotine [10].

**CONCLUSIONS**

Taking in charge smokers with oral diseases in dentistry services, brief advice or more intensive counselling to give-up smoking and finally, developing a network of dentists with skills for management of nicotine dependency represents a goal to achieve within next decade in our country, a country with 36% of Romanian population daily smokers. Transfer of pulmonologists expertise in smoking cessation to dental medicine professionals treating smokers with oral pathology and enriching dentists curricula with tobaccology notions is another goal to attend. If so far, medicine universities curricula did not mandatory provide education in this domain, we hope our efforts will be useful to future generations of doctors to benefit basic knowledge in tobacco and nicotine dependence management. This new and simple expertise will allow them to routinely give brief advice for stopping smoking to any patient who is a smoker, on the same basis as routine pulse, blood pressure or temperature measurement is perceived by any Medicine graduate.
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METHODS FOR MULTIVARIATE DATA ANALYSIS IN THE STUDY OF ORAL DISEASES: THE MULTIPLE LINEAR REGRESSION

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METHODS FOR MULTIVARIATE DATA ANALYSIS IN THE STUDY OF ORAL DISEASES: THE MULTIPLE LINEAR REGRESSION (Abstract): During the statistical analysis of medical data, in many situations it is necessary to identify the multiple correlations established between the studied parameters. In this purpose, one of the most useful methods is to build a model of multiple regression, which allows the modeling of a dependant variable values having at least the ordinal type, based on its linear relation with more than one independent variables satisfying the same restriction, called predictors. The multiple linear regression model is a generalization of the simple linear regression model, which identifies the parameters of an equation with n variables \( y = b_0 + b_1x_1 + b_2x_2 + \ldots + b_nx_n + e \), based on which we can find the predictors that have a statistically significant influence over the dependant variable. We used this model to identify, on a set of 202 patients having different types of oral lesions, the biochemical analysis which can be eventually correlated with the oral diagnosis. We found that the values of leucocytes, hemoglobin and hematocrit are significant for the general oral diagnosis, the cholesterol and glucose values for the oral lesion type, and the hemoglobin for the periodontal disease. The identified predictors are useful for further data processing.

Keywords: multivariate analysis, multiple linear regression, oral diagnosis

INTRODUCTION

In many cases, in scientific researches, it is necessary to analyze the correlations between more than two parameters, in order to detect the internal influences between data. In such cases it is absolutely necessary to choose the right method to study the assumed correlations – because the parameters nature defines in fact the path we are going to follow. There are a few main possibilities to analyze the multiple correlations between data: the regressional models, the principal components analysis, the discriminant analysis, the clustering. The regressional analysis is the easiest available method between these, which tries to find a very clear pattern for data variation: one parameter is interpreted as being “dependant”, so it will be influenced in its variation by all the other parameters. The only problem that remains in this case are to find an appropriate mathematic model for this influences schema; the regressional analysis works with a few mathematic models: the linear regression, the curve estimation, the binary and the multinomial logistic models, the ordinal regression, the probit regression and the non-linear regression. The difference between these models consists not only in their mathematical fundaments, but, more important, in the data types for which there are available.

When all the studied parameters are quantitative and we intend to study in which way one of these parameters, defined as “dependant”, is influenced by all the other, the easiest way to
quantify this influence is to build a model of linear multiple regression and to check how well it fits with the real studied phenomenon.

**MATERIAL AND METHODS**

The linear regression method is used when we need to model the values of a dependant variable according with the values of at least two independent variables, also called “predictors”, using the equation of a straight line. The main requirement that must be fulfilled by all the variables involved in the model is that these variables must have at least the scale type – but the model behaves best when all the variables are quantitative (Draper, 1981).

The linear regression model assumes that there is a linear relationship between the dependent variable and each predictor, described in the following formula:

\[ y_i = b_0 + b_1x_{i1} + \ldots + b_px_{ip} + e_i, \]

where:

- \( y_i \) is the value of the \( i \)-th case of the dependent scale variable
- \( p \) is the number of predictors
- \( b_j \) is the value of the \( j \)-th coefficient, \( j \in \{0, 1, \ldots, p\} \)
- \( x_{ij} \) is the value of the \( i \)-th case of the \( j \)-th predictor
- \( e_i \) is the error in the observed value for the \( i \)-th case

We can notice that we are dealing here with an equation of 1\(^{st}\) degree, with \( p \) variables; \( b_0 \) is the intercept or the model-predicted value of the dependent variable when the value of every predictor is equal to 0 (the point where the line intersects the Oy axes, in a representation using a Cartesian coordinates system). The error term \( e_i \) must fulfill also the following conditions (Draper, 1981):

- Its distribution is normal, with a mean of 0;
- Its variance is constant across cases and independent of the variables in the model;
- Its value for a given case is independent of the values of the variables in the model and of its values term for other cases.

When we build the multiple linear regression model, we must follow a few steps. First, it is necessary to check the model fit (Norusis, 2004). In this purpose, the ANOVA test is used, and the F statistic is calculated; if the F value is statistically significant (\( p \leq 0.05 \)), it follows that the model fits well with the analyzed data, and using it is better than guessing the mean.

Secondly, the correlation coefficients R and R squared are calculated; these coefficients show also how well the model works: R squared, for example, shows the percentage from the dependant variable’s variation which is explained by the model.

Then, for each predictor involved in the model, we calculate its unstandardized and standardized coefficients and its significance level (expressed using the t statistic); in this way we can separate, from all the predictors involved in the model, only the significant ones – in order to eliminate further from the model the non-significant predictors (variables which do not contribute too much to the model). At this step we can also find the relative importance of each significant predictor, which varies proportionally with its standardized coefficient Beta.

At this step it is also good to calculate the part and partial correlation coefficients
(Norusis, 2004); these coefficients help us to detect the possible multicollinearity problems. Such problems appear when the part and the partial correlations are very different by the zero-order correlation – which means that a large amount in the variance of the dependant variable that is explained by the analyzed predictor is also explained by the other predictors – so the predictors are “collinear” and their effects are overlapped. Another coefficient calculated at this step is the tolerance – or the percentage of the variance in a given predictor that cannot be explained by the other predictors; small tolerances show that large amounts in the variance in a given predictor are explained also by the other predictors, so again the multicollinearity is present, and large tolerances show that the multicollinearity is absent. Finally the multicollinearity is also measured using a Variance Inflation Factor (VIF) – that regards the standard error of the regression coefficients; a VIF factor greater than 2 is usually considered problematic, being a clue for predictors multicollinearity.

There are also a few diagnostics tests especially designed for collinearity (Weisberg, 1985):
- in the predictors matrix, the eigenvalues are calculated; if these values are close to 0, it means that the predictors are highly intercorrelated, and therefore, small changes in the data values may lead to large changes in the estimates of the coefficients;
- in the same matrix, the condition indices are also computed, as the squared roots of the ratios of the largest eigenvalue to each successive eigenvalue; values greater than 15 indicate a possible problem with collinearity; greater than 30, a serious problem.

The last step of the analysis regards the collinearity removing, as long as this is possible. In order to do this, the easiest way is to rerun the model using the z scores for all the variables involved (predictors, as well as the dependant variable) instead of their direct values. In this way, only the most useful predictors will be included in the model.

RESULTS

On a set of 202 patients having different types of oral lesions we will try to identify the biochemical analysis which can be eventually correlated with the oral diagnosis using the multiple linear regression model.

In the first step of our analysis, we will use in our model the following variables as predictors: glucose, hemoglobin, monocytes, thrombocytes, lymphocytes, eosinophils, cholesterol, creatinine, leukocytes, red blood cells, neutrophils, hematocrit. The dependant variable is the oral diagnosis, defined as a scale variable which represents the sum of the following binary variables regarding the oral health status: dental mobility, gingival hyper growing, gingival retraction, decay lesions, periodontal disease. Therefore, the 0 value for this variable means health, and its value grows proportionally with the number of new identified symptoms in the oral area.

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>36.791</td>
<td>12</td>
<td>3.066</td>
<td>1.648</td>
<td>.087</td>
</tr>
<tr>
<td>Residual</td>
<td>232.484</td>
<td>125</td>
<td>1.860</td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>269.275</td>
<td>137</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The ANOVA test (table I) shows that the multiple linear regression model doesn’t fit significantly with the analyzed data, but its level of significance is quite close to the threshold value, so it is useful to continue the analysis. The correlation coefficients $R$ and $R$ squared (table II) come to strengthen the previous observation, through their low values: only 13.7% from the oral diagnosis variation is covered by the regressional model.

Anyway, we will still try to identify which are the significant predictors of this model. Checking the significance levels of all the predictors (table III), we notice that the only significant predictors for the model are Leukocytes, Hemoglobin and Hematocrit. According to the Beta coefficient values, it follows that the most important predictor is Hematocrit ($\beta = -0.661$), followed by Hemoglobin ($\beta = 0.584$). The less important predictor is Leukocytes ($\beta = 0.254$). Checking the tolerance values, we can see that most of them are very different of 0; similarly, the VIF factor is bigger than 2 in only 5 cases from all 12 – so, there are not important problems concerning the predictors collinearity.

We will repeat the analysis, in order to find the influence of the same set of predictors (glucose, hemoglobin, monocytes, thrombocytes, lymphocytes, eosinophils, cholesterol, creatinine, leukocytes, red blood cells, neutrophils, hematocrit) over another dependant
variable - oral lesion type. This variable also has the scale type, with 5 values corresponding to increased gravity diagnosis: 0 – no lesions; 1 – epithelial-conjunctive hyperplasia; 2 – chronic ulceration; 3 – prosthesis stomatitis; 4 – precancerous lesions.

This time, the ANOVA test (tab. IV) shows that the multiple linear regression model fits significantly with the analyzed data (p = 0.022 – SS), even if the correlation coefficients R and R squared (tab. V) still have low values: only 16.7% from the oral lesion type variation is covered by the regressional model.

The VIth table shows the significant predictors of the model: this time, only Cholesterol and Glucose have this property – followed by the Creatinine predictor, whose significance level is very close by the threshold (p = 0.064). The most important predictor is Glucose (β =
-0.215), but the other two are also very close: Cholesterol - $\beta = 0.214$ and Creatinine - $\beta = 0.209$. The tolerance values are again high, and the VIF factor is again bigger than 2 in 5 cases from all 12 (but not for the predictors identified as significant); therefore, we don’t have again problems concerning the predictors collinearity.

**CONCLUSIONS**

The multiple linear regression model is useful to identify the correlations between more than two parameters; it allows to select from large set of predictors only the significant ones, and also to classify them according to their importance in the variance of the dependant variable. This method can be successfully used as a preliminary step in data analysis, because the model usually must be rebuilt – including only the significant predictors or, even better, studying only the simple regression line – with a single predictor and the dependant variable – which allows to identify exactly the corresponding correlation coefficients.

**REFERENCES**

THE IMPROVEMENT OF THE MEDICAL SERVICES THROUGH IMPLEMENTATION OF A MULTIFUNCTIONAL PLATFORM PROMED

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THE IMPROVEMENT OF THE MEDICAL SERVICES THROUGH IMPLEMENTATION OF A MULTIFUNCTIONAL PLATFORM PROMED (Abstract): The paper describes the implementation of a multifunctional platform - PROMED - for diagnosis and medical decision optimization to improve quality and efficiency of healthcare services. The information platform will be used to manage medical activities, electronic medical records and will enable collaboration among all stakeholders involved in health care: patients which will participate actively in information process about their health; healthcare providers can access information about their patients; public health authorities will have access to public information and will be enabled to provide prevention plan and early warning about epidemic diseases. The multifunctional platform will use modern information technologies for increasing quality and efficiency of healthcare in the new information society.

Keywords: healthcare, patient, health information, software for health care, virtual support, medical image management

INTRODUCTION

Today’s national healthcare system is very expensive, slow and inefficient. There are many problems occurring in the classical healthcare ranging from paper format health records to diagnosis, referrals and prescriptions, treatment. The patient medical data are not kept up-to-date in one repository and are not accessible to healthcare professionals.

Using the information platform will have the following benefits: transparent access to medical patient data, processing of electronic healthcare records which contain all relevant medical data, active participation of patients in health care processes, continuous training of healthcare professionals through access of information, enabling public health authorities to access public information that operate under requirement of confidentiality which will enhance the capacity of disease prevention at regional and national level. The using of informational platform at national level will eliminate the cross-borders for citizens and will provide access equally to care for all citizens independent of point of care using communication networks and information tools.

The Information Society through new technologies and services offers new possibilities for increasing quality of health care and reducing medical errors. It improves care services for
patients and provides new support for the healthcare professionals. In the information society context, the e-health definition refers to using of modern information and communication technology to meet needs of citizens, patients, healthcare professionals, healthcare providers. Trust is a fundamental concept in e-health. To receive the care they need, patients must share private information and be willing to take medications, use medical devices, or accept interventions that intrude on their bodies. They rely on healthcare providers to keep their personal information confidential, to provide accurate and information about their conditions and possible treatments, and to recommend the appropriate therapy.

The mission of e-health is to provide improvement in quality, safety and efficiency of healthcare through information and information technology. The amount and complexity of health related information and knowledge has increased so much that the information processing has became an important part of healthcare systems. It is obvious that healthcare is an intensive information sector depending on information technology and communication.

**MATERIAL AND METHODS:**

The purpose of the PROMED project is to implement a multifunctional platform that will be capable to manage all medical and administrative patie nt data and will provide early diagnosis, hospital stationary reduction, easy access to information.

The main objective is to use modern information technologies for increasing quality and efficiency of healthcare in the new information society.

The information platform will be designed using low-cost information technologies and advanced communication infrastructure to providing rapid access to medical information independent at the point of necessity.

The PROMED - Multifunctional Platform proposes to integrate the entities involved in the care process of patients for a profitable influence to the health system.

The main directions for improving quality, access and efficiency of healthcare are:
- development of an intelligent environment that enables citizens to manage their health status through access to guaranteed medical information
- participation of the patients with responsibility in process of care and treatment of specific diseases, providing access of healthcare professionals to relevant information and providing tools to reorganisation of healthcare systems.

The Internet will become the effective strategy to provide on-line medical services. Any person, anywhere, using a simple Web browser can have access to quality of healthcare. The e-health tools and applications can provide fast and easy access to electronic health records where is necessary.

Having access to complete and secure electronic health records will facilitate appropriate treatment of patients in providing health professionals with a better knowledge of the patient’s history and of previous interventions by other colleagues.

In the process of providing healthcare services a key position to provide the patient care is represented by the patient medical record.

The medical record includes an ensemble systematizing of the patient medical historical and also information referring to the care of the patient. The medical records are personalized documents of the patients and are submitted to the ethics principles and the available laws relating to the access to personal information and to other entity involve in the population healthcare development to carry out
The registered information in medical records assures the support in the carry on medical act and to walk step by step the patient. Also the medical records are in the medical care basis planning, communication of the medical opinions between healthcare professionals to solve hard case and for services documentation destined to the patients.

The medical records can be used in the training process of the students and healthcare professionals with preserving the data confidentiality.

In present each patient is able to have some medical records (different medical record in different healthcare institutions: hospitals, family physician, dispensary) dividing some information or comprising unique information (fig. 1).

![Figure 1.](image)

**The patient medical record purpose:**

The patient medical record purpose is to preserve faithfully the record information. The principal purpose of using the patient medical record is the patient care.

The patient medical record may be considered by many view points:

- by the view point of the patient rights to the medical services, confidentiality, autonomy, and legal protection;
- by the view point of the activity and security medicine specialists employed;

This entails that a record health or a health administration date system is necessary to support various purpose as:

- **Orientate purposes about patient**
  
  o to do easy the access of information to and about patient;
  
  o to protect the patient rights relating to clinical and personal information;

- **Professional purposes**
  
  o to improve the capacity to make a diagnostic;
  
  o to allow the authentication of the information entering by an authorized signature;

- **Ethical Purposes**
  
  o to be use exigencies of the ethic context and to provide date adequate for this purpose;

- **Management Purposes**
  
  o to provide date for management to different levels of heath system;

- **Research and statistically purposes**
  
  o to provide information referring the being taken ill;
to provide a means for the information gathering about illness and specific programs;
- to aid to the healthcare technologies optimization;

**Education Purposes**
- to provide date for training;

**Financial Purposes for thirds**
- to answer to the needs of the local authorities and governmental organizations which pay for the healthcare;
- to answer to the audit needs or the healthcare system to any level.

The Information Society through new technologies and services offers new possibilities for increasing quality of health care and reducing medical errors. In the some time in the medical field has adopted a new concept to draw up the medical records namely the *Patient electronic medical record* FEP which represents a medical informatics source for each individual patient and which can be generating, to bring up to date, to modify by electronic means.

FEP is a useful instrument in the healthcare professionals for the access to all information recorded irrespective of asking place and moment.

FEP automatizes the medical date circulation of the patients in informatics systems and so ensure the tide to all clinical information and decrease the delay in information processing and development of medical activities.

FEP has becomes a generic term. There are more levels of development of the electronic medical record. Some levels have a succession of general and individual feature with which they made the separation between them.

**PROMED - Patient Electronic Record**

Starting with the existing models which are in use in the healthcare processes there were establish the follows sections which must be parts of patient electronic medical record structure. This record will be used in Multifunctional Platform.

<table>
<thead>
<tr>
<th>Identification date of the patient</th>
<th>Medical historical of the patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name and surname;</td>
<td>Medical historical of the family</td>
</tr>
<tr>
<td>CNP;</td>
<td>Social historic</td>
</tr>
<tr>
<td>Address;</td>
<td>Habits</td>
</tr>
<tr>
<td>Phone, mobile phone;</td>
<td>Immunizing Historical</td>
</tr>
<tr>
<td>Profession and job;</td>
<td>Allergies</td>
</tr>
<tr>
<td>If is a insured person.</td>
<td>Surgery Historical</td>
</tr>
<tr>
<td></td>
<td>Obstetrics historical</td>
</tr>
<tr>
<td></td>
<td>Medical treatment</td>
</tr>
</tbody>
</table>

**Medical Consultations**

- List of presenting to the physician for simple consultations in polyclinic or consultations for hospitalizing

It can register the follows:
- Symptoms
- Physic examination (body temperature, pulse, blood pressure, respiration) as well as the
investigation of various intern organs especially those which requires medical attention
- Diagnosis –this section includes the list of diagnosis (principals, secondary) establish by the physician after the investigation performed
- Treatment –include the list of recommended medicaments (name, quantity, duration etc) in pursuance of diagnosis establishment

In addition for the hospitalized patients is necessary the recording of supplementary date as: Progress Note - this section is completed in every day or in the moment when appears a modification in the health of the hospitalized patient and contains clinical changes, new information. These notes must be completed chronologically and must to point up the patient health.

- **Laboratory Analyses**- this section includes the list of all analyses which were effected (blood, urine, secretions) with the emphasizing of the resulting values in the normal limits
- **Other medical information** - Many other information may be register in patient medical record as: digital image, monitoring EKG, EEG, outlets of medical equipment, chemotherapy protocols etc
- **Recommendations** –include instructions given by the physician who pursues the patient and the other members of the team who examine the patient health

**CONCLUSIONS**

The platform will be used to manage the medical services involved in the diagnosis and decision process and manage the medical files. It will allow the interaction between the three main components in the health system:
- the patients, how will actively follow their own medical state;
- the people that are offering medical services, how can access the patients medical records;
- the public authorities that can built real time reports regarding the health status of the population and can develop action plans to prevent and inform the citizens if an epidemic is developing.

The PROMED platform represents the internet access point for the on-line system of medical services, assuring services like: access control, audit, management, rapport creation.

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A CASE OF POLITRAUMA TREATED IN THE ICU OF IASI NEUROSURGERY HOSPITAL

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A CASE OF POLITRAUMA TREATED IN THE ICU OF IASI NEUROSURGERY HOSPITAL (Abstract): We present the case of T. A., a 17 years old woman, victim of a scooter accident. The patient was admitted in the ICU in deep coma (Glasgow Coma Scale 5), with politrauma: severe head trauma, left occipital hematoma and laceration, bilateral fronto-temporal haemorragic contusions, double fracture of the mandibula, pulmonary contusion, abdominal trauma, fracture of the left clavicle and distal epiphysis of the left radius bone. The patient suffered multiple neurosurgical operations. She was mechanically ventilated for 10 days and suffered complications such as ARDS, bacterial meningitis and severe sepsis with hospital acquired microorganisms. During the stay in ICU, after an alternating but eventually positive evolution, the rehabilitation therapy was instituted. At discharge, the patient was conscious (GCS – 11), with sensory aphasia and right hemiparesis and was referred to a neurologic rehabilitation clinic.

Keywords: severe sepsis, head trauma, politrauma

INTRODUCTION

Politrauma is a syndrome determined by the action of different powerful agents (e.g. mechanical, chemical) that affect at least two regions of the human body, and at least one has a lethal potential.

The etiology and gravity of politrauma has very much changed in the last century due to the development of mankind (warfare tehnikes, car industry a.s.o.).

We present the case of a victim of a scooter accident. The patient was admitted in the ICU in deep coma (Glasgow Coma Scale 5), with politrauma: severe head trauma, left occipital hematoma and laceration, bilateral fronto-temporal haemorragic contusions, double fracture of the mandibula, pulmonary contusion, abdominal trauma, fracture of the left clavicle and distal epiphysis of the left radius bone.

CASE PRESENTATION

The patient T.A., female, aged 17, victim of a scooter accident, without other known pathology or drug abuse history, is brought by the ambulance at the Emergency Department of Iasi Neurosurgery Hospital in deep coma (Glasgow Coma Scale 5 – E1V1M3). She was brought intubated, sedated with propofol, mechanically ventilated, with flexion of both arms, pupils equally in diameter. The patient is haemodinamically stable, with breath sounds present equally bilateral. The politrauma has a craniofacial component (severe head trauma), a thoraco-abdominal and extremities component. The cerebral native CT-scan revealed bilateral fronto-temporal haemorragic contusions, left occipital hematoma and laceration, with diffuse cerebral edema without mass effect and left parieto-occipital cominutive
fracture. Because the cerebral lesions didn’t require emergent surgical intervention, the patient was sent to the Surgery Clinic for the diagnosis and treatment of the thorax, abdomen and extremity lesions.

The patient returns in our clinic after 12 hours, diagnosed with left basal pulmonary contusion, superficial splenic lesion, double fracture of the mandible, fracture of the left clavicle and distal epiphysis of the left radius bone, none of which had necessitated emergency operation.

She was admitted in the Intensive Care Unit (ICU), sedated, mechanically ventilated with muscle relaxant (IPPV mode – intermittent positive pressure ventilation).

The lab tests were normal except for the hemoglobin (8.5 g/dl), hematocrit (25.5%) and white cell count (19800/mm³). The serial arterial blood gases were maintained acceptable during hyperventilation.

After 24 hours of mechanical ventilation the patient presents suddenly left midriasis. The CT scan shows, apart from the lesions presented at admission, the augmentation of the cerebral edema with the colabation of the left lateral ventricle and important midline shift towards right. After some debate, the surgeons performed an emergent decompressive craniectomy.

In the postoperative period, the midriasis resolves, pupils become equal again, but the patient begins to present pulmonary rales and fever (over 38°C) (being mechanically ventilated). In addition, she presents bilateral chest infiltrates on the chest X-ray; corroborated with a low hypoxemia score (PaO2/FiO2 under 200 mmHg), and a suggestive clinical context (pulmonary contusion), all these criteria sustain the diagnosis of acute respiratory distress syndrome (ARDS) (Bernard, Artigas, 1994). Despite its controversial effect, high dose corticotherapy was initiated.

During the first 2 postoperative days, because of the cerebral edema (fig. 1), we could not use PEEP (positive end expiratory pressure); still, we used small tidal volumes for avoiding barotrauma. Gradually the muscle relaxant administration was stopped and the controlled ventilation mode was converted into an assisted mode, which also allowed the reduction of sedative and analgesic drug doses.

Figure 1. Postoperative day 1: CT scan. One can observe the brain herniation through the craniectomy space.
At this time, the bacteriology came positive in the pulmonary secretions for *Pseudomonas aeruginosa*, with negative hemocultures, urine and feces cultures; the lab tests show, apart from the inflammatory syndrome, a severe anemia (hematocrit 19%), but also moderate thrombocitopenia with altered coagulation tests. With the procalcitonin test positive, we suspected a sepsis of pulmonary origin. (Surviving Sepsis Campaign, 2004).

The patient had received broad spectrum antibiotics until the positivation of cultures; afterwards, as guided by the antibiogram (the strain had sensibility for imipenem) she also received erytrocite mass and fresh frozen plasma. For two days we initiated inotrop and vassopressor therapy because of the hemodynamic instability (severe sepsis). The patient had been receiving parenteral nutrition from day one.

Through the seriated neurological evaluations, the patient began to present reactivity at pain stimuli (withdrawal on the left side, right hemiplegia) – GCS – 6 The pupils are equal and reactive. The haemorrhagic cerebral lesions are beginning to resolve, and the CT scan performed at day 4 shows the diminuation of the mass effect as the brain expansionates through the craniectomy space (fig. 2).

![Figure 2. CT scan: postoperative day 4](image)

The hypoxemia score gradually improves, corelated with the chest X-ray images. ARDS is resolving, but the patient continues to present pulmonary rales and subfever. The chest X ray suggests bronchopneumonia.

During the 8th postoperative day, the patient opened her eyes. After the T-piece weaning protocol, she was detubated (Glasgow coma scale 10). Antibiotherapy was continued (imipenem plus levofloxacin).

After a period of relative stability, the cultures from the tip of the central venous catheter become positive also for *Pseudomonas aeruginosa*, with sensibility for Imipenem.

In the meantime, several complications of surgery develop – hydrocephalus, external CSF fistula and after that, meningitis with coagulazo-negative Staphilococcus susceptible at linezolid and vancomycin.

A continuous lumbar drainage was instituted (because of the meningitis, an external ventricular drainage was contraindicated) and vancomycin was added in the therapy. The fistula gradually resolves, and the meningitis also.
After 7 days of continuous lumbar drainage, for the definitive treatment of hydrocephalus, a ventriculo-peritoneal shunt was put in place. During the evolution, the haemorrhagic lesions resolve, but an ischemic area in the left frontal lobe persists.

After 56 days in the ICU, the patient is transferred to a maxillo-facial surgery clinic, where the mandibula fracture is resolved. She is sent back after 2 days.

During the time spent in the ICU, the neurologic rehabilitation therapy was instituted. She was discharged with right hemiparesis, sensory aphasia and deglutition disturbances, receiving food via the naso-gastric tube. She was referred to a neurologic rehabilitation clinic.

Within one month, the deglutition disturbances ameliorated, and the aphasia partially resolved.

**DISCUSSION**

It is interesting that the initial neurologic deterioration took place with the patient being mechanically ventilated, with the ventilatory parameters correlated with the seriated ABGs. After some debate regarding the opportunity and magnitude of the intervention, the right decision was made – decompressive craniectomy, which allowed the brain to expansinate through the craniectomy space which allowed the decrease of PIC (intracranial pressure).

It would have been very useful the PIC monitoring, if we only had one.

The postoperative external fistula was the cause of the meningitis with a nosocomial microorganism.

ARDS responded well to corticotherapy, associated with the adjustment of the ventilatory parameters, without exceeding the PEEP. ARDS represented the debut of pseudomonas sepsis, which ultimately needed inotropic support. The *Pseudomonas* pneumonia fulfilled the VAP (ventilator associated pneumonia) criteria (Wunderink, 2000).

It was acutely felt the missing In Iasi of a hospital with all the medical and surgical specialties, as this case frequently needed a multidisciplinary evaluation (anesthesiologist, intensive care specialist, neurosurgeon, neurologist, general surgeon, maxillo-facial surgeon, orthoped, pneumology specialist a.s.o.)

The patient was hospitalized for 69 days. The costs were partially supported by the family and were around 20000 RON.

**CONCLUSION**

The decompressive craniectomy, despite the controversies, proved efficient. The diagnosis of ARDS was quick, and resolved with high dose corticotherapy, without the use of PEEP. Sepsis was treated according to the latest guidelines. The alternating clinical evolution of the patient was due to the hospital aquired microorganisms, with multiple antibiotic resistance.

**REFERENCES:**

ANTIBIOTIC THERAPY OF NEGLECTED PERITONITISES – CLINICAL TRIAL

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ANTIBIOTIC THERAPY OF NEGLECTED PERITONITISES – CLINICAL TRIAL

(Abstract): the treatment with antibiotics represents one of the main components of the medical treatment of neglected peritonitis. Material and method: in principle, the antibiotics therapy must take place based on the bacteriological examination and with the results of the antibiogram in mind. However, in practice, because of the emergency situation and the polymorphism of bacteria we could also apply certain theoretical criteria in order to properly select the antibiotics treatment, but: the antibiotic must be active for the peritonitis germs; it must have a good penetration and it must concentrate in the peritoneal cavity; it must not any have toxic effects and must not be conducive to kidney failure. In our trial we have used a systematic antibiotics treatment in emergency situations, and we have often chosen combination of antibiotics following the analysis of the peritoneal pus and the antibiogram outcome. Results: The antibiotics used the most were Penicillin, Gentamicin, Metronidazole and Ampicillin. The combination of three antibiotics was used in 67.35% of all the cases when antibiotics were used. The antibiotics mostly used in an association of two were: Penicillin, Gentamicin, Ceftriaxone, Cefazolin. This association was used in 26.53% of the cases when antibiotics were used in the treatment. The most frequent antibiotics used in a combination of two for the treatment of acute appendicitis were: Ampicillin and Gentamicin, respectively Ampicillin and Metronidazole. The percentage of this association of the whole antibiotherapy for acute appendicitis represents 23.81%. In our trial we have compared the therapeutic proficiency of one antibiotic vs the combination of antibiotics in cases of neglected peritonitis. From our results we have found that there was an increased sensibility and a high rate of response (92%) in the patients treated with Imipenem and Netilmicin, in comparison with the rate of positive response of 83%, which we achieved when Imipenem was administrated in monotherapy. Conclusions: We have applied an algorithm of antibiotics therapy in a growing scale: Tienam (Imipenem) usually, in the 3 days until we have obtained the result of the antibiogram and we have become aware of the sensibility of the bacteria and had the possibility to choose a combination of antibiotics.

Keywords: neglected peritonitises, antibiotics therapy, imipenem

OBJECTIVE

Our trial analyzed the clinical presentation and bacteriologic findings of our antibiotics treatment which represents the main method in the cure of neglected peritonitis from an etiological standpoint. 

In principle, the antibiotics therapy must take place based on the bacteriological examination and with the results of the antibiogram in mind. However, in practice, because of the emergency situation and the polymorphism of bacteria we could also apply certain theoretical criteria in order to properly select the antibiotics treatment, but:
- The antibiotic must be active for the peritonitis germs;
- It must have a good penetration and it must concentrate in the peritoneal cavity;
- It must not have any toxic effects and must not be conducive to kidney failure.

**MATERIAL AND METHODS**

In our trial, we have used the systematic antibiotics therapy and in emergency situations we have chosen a combination of antibiotics based on the organoleptic and bacteriological examination of the peritoneal liquid. The species of germs found are synthetically represented in fig.1. All these germs were tested in order to establish their sensitivity to antibiotics. We have found them to be highly sensible to Imipenem (90%) and to a combination of Amoxicillin and Clavulanic acid (fig. 2).

![Figure 1. Bacteriological exam: species of germs identified with neglected peritonitis](image1)

![Figure 2. Sensibility of tested germs to antibiotics](image2)

We have compounded a comparative study regarding the therapeutic efficiency of one antibiotic vs. the combination of antibiotics used in cases of neglected peritonitis. The results obtained have been plotted in fig. 3.

![Figure 3. Comparative study: monotherapy vs associations of antibiotics for neglected peritonitis](image3)

![Figure 4. Global list of antibiotics](image4)

As we may easily see, the patients that were administered a combination of antibiotics: Imipenem and Netilmicin have a higher sensitivity and rate of cure (92%) in comparison with the patients who received Imipenem as monotherapy, and whose rate of cure was around 83%.
The association of Piperacillin with Tazobactam determined a rate of cure similar with the one obtained with the monotherapy of Imipenem (namely, 83%).

In fig. 4 we presented the global list of antibiotics which were used for the treatment of neglected peritonitises and we plotted the number of cases in which we used a single antibiotic therapy and the type of antibiotic used, the number of cases when we used an association of two antibiotics and the type of antibiotics used, as well as the number of cases when we used an association of three antibiotics and their respective type [1]. In fig. 5 we described the antibiotic treatment applied to neglected peritonitises caused by appendicitis. We have found a high number of cases when the patients were administered a combination of three antibiotics (47 cases were treated with an association of ampicillin, gentamicin and metronidazole) [2]. The antibiotic treatment used for neglected peritonitises caused by ulcer perforation was described in fig. 6.

In fig. 7 we introduced the high number of cases treated with an association of two antibiotics, 17 cases, and an association of three antibiotics, 6 cases. The explanation of this type of treatment is that we considered that peritonitis did not have any anaerobic germs and for this reason we did not associate metronidazole as well.
In fig. 8 we represented the antibiotic treatment used for other categories of cases when we used a combination of three antibiotics as with these cases we had a very poor prognostic in consideration.

In fig. 9 one may find a representation of the period of antibiotics treatment and of the hospitalization in all cases of neglected peritonitis per categories of diagnosis. In all categories of diagnosis we have found that the period of antibiotics treatment has been smaller than the period of hospitalization.

RESULTS
For the cases of neglected peritonitis we used the following combinations of antibiotics:

The combinations of three antibiotics most frequently used were:
• Penicillin + Gentamicin + Metronidazole;
• Ampicillin + Gentamicin + Metronidazole.

*this association represents 67.35% of the total treatment with antibiotics.*

The combinations of two antibiotics most frequently used were:
• Penicillin + Gentamicin;
• Ceftriaxone + Gentamicin;
• Cefazolin + Gentamicin.

*these association of two antibiotics represent 26.53% of the total treatment with antibiotics.*

In acute appendicitis with peritonitis, the most frequent associations of two antibiotics were: Ampicillin + Gentamicin, Ampicillin + Metronidazole and Penicillin + Gentamicin.

The total percent of these associations of antibiotics in such cases of acute appendicitis were 23.81%.

DISCUSSION
In a Swiss multi-thronged study (Inselspital, Bern) [3,4] focused on the comparison between treatments: monotherapy vs. a combination of Imipenem + Netilmicin, they concluded that there had not been any difference in terms of efficiency. Moreover, the association with an aminoglycoside increased the renal toxicity without decreasing the
incidence of *Pseudomonas aeruginosa*, which is resistant to imipenem [3,4].

In another very documented study by Ho and Barza, the conclusions were that the association between aminoglycoside and cephalosporin or another penicillin with wide spectrum did not have any clinical effect [5,6].

The main demand for an antibiotic used with secondary peritonitis is to be actively fighting aerobic and anaerobic germs. This may be achieved with a combination of aminoglycoside and Clindamycin, Metronidazole or Chloramphenicol. All these types of antibiotics proved to have similar efficiency [7].

The aminoglycosides proved to be efficient in the prospective trials which demonstrated that there was a low risk for the microbiotic resistance to appear if penicillin plus cephalosporin were used [8].

**CONCLUSIONS**

This study convinced us that the best way would be to adopt a gradual scheme of therapy with: Tienam (Imipenem) for the first three days and then, based on the results of the antibiogram and the sensitivity of the germs, we could administer a combination of antibiotics.

**REFERENCES**