

Systemic Alterations in patients submitted to exodontics at the Bauru School of Dentistry (USP)

Alterações Sistêmicas em pacientes submetidos à exodontia na Faculdade de Odontologia de Bauru (USP)

Alteraciones Sistémicas en pacientes sometidos a exodoncia en la Facultad de Odontología de Bauru (USP)

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Abstract

Objective: To verify the rate of systemic changes observed in individuals seen at the Oral and Maxillofacial Surgery and Traumatology clinics of the Undergraduate Dentistry course at the Faculty of Dentistry of Bauru (FOB-USP). **Methodology:** a retrospective study of the medical records of individuals seen at the Oral and Maxillofacial Surgery and Traumatology clinics of the third and fourth years of the Dentistry course at FOB-USP, from January 1, 2015, to June 30, 2017. Data collection was performed based on information from the anamnesis obtained during the initial care of the patients and recorded in the medical records. The selected data were name, age, address, diagnosed systemic disease, current and/or past medical treatments, proposed surgical treatment, and, if there was, patient return after medical treatment for surgery. The medical records of individuals under the age of 18, patients who did not have any systemic changes, or those with systemic changes observed outside the initial care period were excluded. **RESULTS:** The sample consisted of 266 medical records and 119 of these were from individuals who had systemic changes (44.7%), with systemic arterial hypertension being the most common (33.1%), followed by diabetes mellitus (17.8%). **Conclusion:** the high prevalence of individuals with systemic alterations and who require dental surgical intervention was proven, which implies the need for a correct anamnesis and preoperative evaluation so that these cases are managed to avoid trans and/or post-operative, systemic, and/or local.

Keywords: Dentists; Dental offices; Emergencies; Diabetes Mellitus; Hypertension.

Resumo

Objetivo: verificar o índice de alterações sistêmicas observadas nos indivíduos atendidos nas clínicas de Cirurgia e Traumatologia Bucocomaxilofacial do curso de Graduação em Odontologia, da Faculdade de Odontologia de Bauru (FOB-USP). **Metodologia:** estudo retrospectivo dos prontuários dos indivíduos atendidos nas clínicas de Cirurgia e Traumatologia Bucocomaxilofacial do terceiro e quarto anos do curso de Odontologia da FOB-USP, no período de 1 de

janeiro de 2015 a 30 de junho de 2017. A coleta dos dados foi realizada a partir das informações da anamnese obtida durante o atendimento inicial dos pacientes e anotadas nos prontuários. Os dados selecionados foram nome, idade, endereço, doença sistêmica diagnosticada, tratamentos médicos atuais e/ou progressos, tratamento cirúrgico proposto e, se houve, retorno do paciente após tratamento médico para realização da cirurgia. Foram excluídos os prontuários dos indivíduos com idade inferior a 18 anos, pacientes que não apresentaram nenhuma alteração sistêmica ou aqueles com alterações sistêmicas observadas fora do período de atendimento inicial. Resultados: a amostra foi composta por 266 prontuários e 119 desses eram de indivíduos que apresentaram alterações sistêmicas (44,7%), sendo a hipertensão arterial sistêmica a mais comum (33,1%), seguida pela diabetes mellitus (17,8%). Conclusão: comprovou-se a alta prevalência de indivíduos portadores de alterações sistêmicas e que necessitam de intervenção cirúrgica Odontológica, o que implica na necessidade de uma correta anamnese e avaliação pré-operatória, para que esses casos sejam manejados de forma a evitarmos complicações trans e/ou pós-operatórias, sistêmicas e/ou locais.

Palavras-chave: Odontólogos; Consultórios odontológicos; Emergências; Diabetes Mellitus; Hipertensão.

Resumen

Objetivo: verificar la tasa de cambios sistémicos observados en individuos atendidos en las clínicas de Cirugía y Traumatología Oral y Maxilofacial de la carrera de Pregrado en Odontología de la Facultad de Odontología de Bauru (FOB-USP). Metodología: estudio retrospectivo de las historias clínicas de los individuos atendidos en las consultas de Cirugía y Traumatología Oral y Maxilofacial del tercer y cuarto año de la carrera de Odontología en la FOB-USP, del 1 de enero de 2015 al 30 de junio de 2017. Se realizó recolección de datos. basado en información de la anamnesis obtenida durante la atención inicial de los pacientes y registrada en la historia clínica. Los datos seleccionados fueron nombre, edad, dirección, enfermedad sistémica diagnosticada, tratamientos médicos actuales y / o pasados, tratamiento quirúrgico propuesto y, en su caso, retorno del paciente después del tratamiento médico para la cirugía. Se excluyeron las historias clínicas de personas menores de 18 años, pacientes que no presentaron cambios sistémicos o aquellos con cambios sistémicos observados fuera del período inicial de atención. Resultados: la muestra estuvo constituida por 266 historias clínicas, de las cuales 119 correspondieron a individuos con alteraciones sistémicas (44,7%), siendo la hipertensión arterial sistémica la más frecuente (33,1%), seguida de la diabetes mellitus (17,8%). Conclusión: se ha comprobado la alta prevalencia de individuos con alteraciones sistémicas y que requieren intervención quirúrgica dental, lo que implica la necesidad de una correcta anamnesis y evaluación preoperatoria, para que estos casos sean manejados con el fin de evitar complicaciones trans y / o postoperatorias, sistémica y / o local.

Palabras clave: Odontólogos; Consultorios odontológicos; Emergencias; Diabetes Mellitus; Hipertensión.

1. Introduction

Dental surgical treatment in medically compromised and/or uncontrolled patients can increase the risk of a systemic emergency that can lead to treatment interruption in addition to the risk of systemic sequelae and/or death (Jadhav & Tarte, 2019).

The term clinically compromised refers to dental patients whose health status is impaired by systemic diseases, such as ischemic heart disease, congenital heart disease, liver disease, kidney disease, asthma, immunodeficiency, among others. Although pregnancy is not considered a disease, pregnant women need special care and can also be considered clinically compromised (Kannan et al., 2017).

Arterial hypertension represents a worldwide public health challenge, being one of the most important causes of mortality and morbidity, has a high frequency and concomitant risk of kidney disease (Lim et al., 2010). Hypertension is also known to be associated with chronic heart disease, stroke, coronary heart disease, heart failure, peripheral vascular disease, chronic kidney disease, end-stage kidney disease, retinal hemorrhage, and visual impairment (Singh et al., 2017).

Amirchaghmaghi et al (2015), in their study, found that cardiovascular disease was prevalent (34.1%) and of these patients, 33.9% were hypertensive, while diabetes represented only (5.63%).

It is estimated that about 1 billion people worldwide have hypertension, with associated annual deaths of 7.1 million (Gebreselassie & Padyab, 2015; Mills et al., 2016).

An important fact is that a large number of patients are unaware of being hypertensive. These patients are at increased risk of heavy bleeding and of developing complications during dental care. For this reason, they should be referred to the doctor for the treatment of the disease (Rao et al., 2018).

It can be said that a hypertensive patient has a higher risk of suffering from serious complications or death than a normotensive patient. People with undiagnosed or uncontrolled arterial hypertension regularly sought dental treatment and many of them (73%) were referred to the doctor by the dentist (Fernández-Feijoo et al., 2010).

Antiplatelet therapy medications increase the risk of excessive bleeding during the surgical procedure. However, the risk of bleeding from treatments not associated with highly invasive oral surgery is manageable, and antiplatelet therapy should not be discontinued (Bajkin et al., 2015).

Nonsteroidal anti-inflammatory drugs should be prescribed with caution because their extensive use increases the risk of acute myocardial infarction, although similar use of ibuprofen and naproxen does not (Jick et al., 2006).

Diabetes mellitus represents a group of common chronic metabolic disorders characterized by abnormal glucose metabolism, caused by a defect in insulin secretion, insulin action, or both. There are two main types of diabetes: type 1 and type 2. The latter type is much more prevalent, affecting 85% to 90% of the diabetic population (Lalla & Lamster, 2012).

According to the Diabetes Prevention Program Research Group (2007), people with pre-diabetes have a high risk of developing type 2 diabetes and are already at increased risk for heart disease, stroke, and microvascular diseases.

The predisposition of diabetics to hypertension, as well as the overlap of the two etiopathology, has been well described in the literature, with the suggestion that diabetes and hypertension are found in the same people more often than would be expected to happen by chance (Cheung & Li, 2012; Ferrannini & Cushman, 2012).

Martín-Timón et al., (2014), observed that about two-thirds of patients with diabetes mellitus also suffer from arterial hypertension, with an increased risk of suffering a myocardial infarction or stroke. For this reason, patients with diabetes mellitus and high blood pressure should be considered unique when planning surgery.

The dental surgeon has an important role in the diagnosis and assessment of risk factors for hypertension. Therefore, you should always assess the patient's blood pressure and the medications you use, as most patients with hypertension may not have symptoms. In this way, the possibility of complications during routine dental care can be prevented (Fernández-Feijoo et al., 2010).

They also have a responsibility to seek to identify patients at risk who may remain without information and diagnosis; evaluate signs and symptoms indicative of poor metabolic control in patients with known diabetes; advise patients identified in both groups about their condition and refer them to a doctor for proper evaluation and treatment; and provide safe and predictable oral care for all of these patients, as needed (Lalla & Lamster, 2012).

The American Society of Anesthesiologists (ASA) classification is universally followed to identify risk in clinically compromised patients. ASA 1 is considered to be a normal and healthy individual; without systemic commitment, therefore. ASA 2 refers to an individual with mild systemic disease and without functional limitations, such as controlled hypertension, obesity I, or controlled diabetes mellitus, for example. The individual will be considered ASA 3 when he/she presents severe life-threatening systemic disease, such as, for example, arterial hypertension or uncontrolled diabetes mellitus, obesity II, chronic renal failure, a bronchospastic disease with intermittent exacerbation, stable angina, and step implanted, while ASA 4 would be a person with severe systemic disease that constantly threatens life; that is, poorly controlled chronic obstructive pulmonary disease, unstable angina, symptomatic congestive heart failure, recent myocardial infarction or stroke. Individuals classified as ASA 5 are those with an imminent risk of death, with no possibility of survival beyond the next 24 hours, without surgery such as rupture of abdominal aortic aneurysm, massive trauma, and extensive intracranial hemorrhage; while ASA 6 is one with brain death, whose organs can be donated/removed for transplantation (Doyle et al., 2020).

Abraham-Inpijn et al. (2008) reported 120 deaths in dental surgery over 10 years in Britain. In the Netherlands, they found 28 emergencies in a year, including sudden death as a result of myocardial infarction.

For this reason, it is important to carry out a correct anamnesis and assessment of the patient's vital signs, which can help in the identification of systemically compromised patients. In this way, changes in the treatment plan can be made, such as referring the patient to a medical specialist (Smereka et al., 2019).

The present study aimed to verify the rate of systemic changes observed in individuals seen at the clinic of Oral and Maxillofacial Surgery and Traumatology of the Faculty of Dentistry of Bauru (FOB-USP).

2. Methodology

This is a retrospective study, using the qualitative method, in which the data contained in the medical records of individuals attended by 3rd and 4th year student of the undergraduate Dentistry course at the Bauru School of Dentistry, were collected. The period studied was from January 2015 1st to June 30th 2017. The data collected was presented in a descriptive form in table format.

The inclusion criteria were the medical records of individuals aged 18 and over, whose anamnesis showed a diagnosis or clinical suspicion of some systemic alteration, such as Heart Failure (CHF), Angina Pectoris, Systemic Arterial Hypertension (SAH), Hepatitis, Diabetes Mellitus (DM), Acute Renal Insufficiency, among others., And to have been seen at the FOB-USP Oral and Maxillofacial Surgery and Traumatology clinic. The medical records of individuals under the age of 18 years were excluded, and those attended outside the period from January 1, 2015, to June 30, 2017.

The data collected were: name, age, race, diagnosed systemic disease, proposed surgical treatment, current and/or previous medical treatments, and whether the patient returned after medical treatment for oral surgery. In cases where suspicions of systemic changes in the medical record were reported, the conduct took, referral for diagnosis and medical treatment, request for additional tests, and whether the patient would have returned for surgery after referral to the doctor were also analyzed.

3. Results

There were 266 medical records of individuals seen at 3rd and 4th-year surgery clinics, from January 1, 2015, to July 31, 2017. Of these 266 medical records, 119 presented anamneses with a record of any systemic changes, which represents 44.73%.

Of the 119 medical records of analyzed, 63% were under medical treatment, 12.6% were not under medical treatment and 4.4% did not contain information about whether or not they were under medical treatment. The average age of all patients who had some type of systemic change was 42.5 years. Regarding gender, it was found that 79 people (66.38%) were women and 40 (33.62%) were men. As for race, 114 (95.8%) were white, 02 (1.7%) brown and 03 (2.5%) black. The relation between gender, race and data related to medical treatment in detailed in Table 1.

Table 1: Relation between gender, race and data related to medical treatment.

Medical Records Informations		Race		Gender	
Under Medical Treatment	63%	White	95,8%	Women (n)	Mens (n)
Without Medical Treatment	12,3%	Brown	1,7%	79	40
Without Information	4,4	Black	2,5%	66,38%	33,62%

Source: Authors.

The main systemic change found was hypertension (33.6%), followed by diabetes (17.7%), low blood pressure (14.2%), anemia (6%), and hyperthyroidism (4.2%), the others systemic changes are shown in Table 2.

Associations were also found between systemic changes. The main association was between diabetes and hypertension (11.8%), followed by anemia and low blood pressure (2.5%), hypertension and hypothyroidism (1.7%), and hypertension and arrhythmia (1.7%), the others associations between systemic changes are described in Table 3.

The total number of extracted teeth was 152, of which 92 were third molars, 54 other teeth and 6 residual roots (Table 4).

Other observations were found in the medical records, 3 patients under radiotherapy treatment, 2 patients under antibiotic prophylaxis, 2 patients with postoperative complications (1 with hematoma and limited mouth opening and 1 with an abscess for not taking the prescribed antibiotic), 2 patients who underwent surgery without a letter of authorization, 1 patient who had a doctor's authorization letter, 1 patient allergic to ASA, 1 patient dismissed with suspected pregnancy, 1 patient had no indication for teeth extraction 28 and 38, 1 patient who did not agree to the extraction, 1 patient with fainting episode during surgery, 1 patient with increased bleeding who needed hemostatic sponge (hemostop) and 1 patient who did not show up on the day of the consultation. (Table 5).

Table 2: Prevalence of Systemic Changes.

Systemic Alteration	Incidence
Hypertension	33,6%
Diabetes Mellitus	17,7%
Low pressure	14,2%
Anemia	6%
Hyperthyroidism	4,2%
Bronchitis	2,5%
Arrhythmia	2,5%
Migraine	1,7%
Asthma	1,7%
Labyrinthitis	1,7%
Arthrosis	1,7%
Depression	1,7%
Uterine Myoma	0,9%
Bullous Epidermolysis	0,9%
Coagulopathy	0,9%
Lupus	0,9%
Rheumatism	0,9%
Fibromyalgia	0,9%
Hepatite A	0,9%
Heart Murmur	0,9%
Stroke	0,9%
Epilepsy	0,9%
Cancer Treatment	0,9%
Preeclampsia	0,9%
Total	100%

Source: Authors.

Table 3: Prevalence of associations of systemic changes.

Systemic Alterations Associations	Incidence
Diabetes and Hypertension	11,8%
Anemia and Low Blood Pressure	2,5%
Hypertension and Hypothyroidism	1,7%
Hypertension and Arrhythmia	1,7%
Hypertension and Cancer Treatment	0,8%
Low Blood Pressure and Migraine	0,8%
Diabetes, Hyperthyroidism and Hypertension	0,8%
Hypertension and Labyrinthitis	0,8%
Hypertension and Hyperthyroidism	0,8%
Diabetes, Bronchitis and Hypertension	0,8%
Asthma, Bronchitis, Rhinitis and Sinusitis	0,8%
Arthrosis and Diabetes Mellitus	0,8%
Migraine and Heart Murmur	0,8%
Pregnancy and Depression	0,8%
Anemia e Diabetes Mellitus	0,8%
Arrhythmia and Stroke	0,8%
Asthma and Low Blood Pressure	0,8%
Rheumatism and Low Blood Pressure	0,8%
Fibromyalgia and Hepatitis A	0,8%
Bullous Epidermolysis, Anemia, Labyrinthitis and Low Blood Pressure	0,8%
Total	30,5%

Source: Authors.

Table 4: Number of extracted teeth.

Extracted Teeth	Number of Teeth	%
Third Molars	92	60,5%
Other Teeth	54	35,5%
Residual Roots	6	4%
Total	152	100%

Source: Authors.

Table 5: Other observations in the medical records.

Observations	N	%
Radiotherapy Treatment	3	2,5%
Antibiotic Prophylaxis	2	1,7%
Postoperative complications	2	1,7%
Patients without a doctor's authorization letter	2	1,7%
Patients with doctor's authorization letter	1	0,8%
AAS Allergy	1	0,8%
Suspected pregnancy	1	0,8%
No indication for extraction	1	0,8%
Patient did not agree with the extraction	1	0,8%
Patient did not attend	1	0,8%
Fainting episode during surgery	1	0,8%
Increased bleeding	1	0,8%
Total	17	14%

Source: Authors.

4. Discussion

Individuals who need to undergo surgical procedures should be evaluated to rule out the presence of systemic changes or to be able to evaluate the use of drugs that may have drug interactions with local anesthetics and/or drugs prescribed in the pre or postoperative period. In addition to the importance of anamnesis and clinical examination, the degree of knowledge of the dental surgeon directly influences the treatment, and the way of dealing with different types of emergencies.

In a survey of 498 dental surgeons, it was observed that only 41% of the professionals questioned considered themselves capable of diagnosing the cause of the emergency during a dental appointment (Andrade & Ranali, 2011). This is relatively low when considering the amount of incidence of changes present in individuals who receive dental treatment.

In the present study, it is possible to notice the occurrence of several systemic diseases observed during anamnesis and clinical examination. Among these, hypertension was prevalent (33.6%), this agrees with several studies where hypertension was also the main systemic disease found (Amirchaghmaghi et al., 2015; Gebreselassie & Padyab, 2015; Mills et al., 2016). Arterial hypertension also shows a considerable increase among Brazilians. According to data from the Ministry of Health, where the proportion of diagnosed Brazilians grew from 21.5% in 2006 to 24.4% in 2009, it is estimated that the disease affects 22% of the Brazilian population over 20 years old (Andrade & Ranali, 2011).

Hogan & Radhakrishnan (2012), found that 30% of the individuals in the study were unaware that they had the condition, 41% did not undergo medical treatment, and only 34% had blood pressure below 140/90 mmHg. Therefore, the dental surgeon through anamnesis and clinical examination is often responsible for primarily identifying this condition, as it is asymptomatic in some cases. Despite its value in the identification process, it is important to remember that the final diagnosis and treatment is the responsibility of the physician, and therefore these individuals must be referred for evaluation.

The second prevalent systemic disease was diabetes, corresponding to 17.7%, in contrast to the study by Amirchaghmaghi et al (2015) where diabetes had a very low prevalence (5.63%).

It is known that patients with uncontrolled diabetes mellitus have a higher risk of developing postoperative infections and difficulty in healing wounds. This is related to the effects of chronic hyperglycemia on the immune system, resulting in relative immunosuppression (Mohamed et al., 2014). Thus, initial therapy should focus on controlling any acute infections identified and a less complex gradual therapy plan should be promoted when possible (Lalla & Lamster, 2012).

In this study, hypertension and diabetes were prevalent among disease associations, similarly, several studies show the same result indicating that a high rate of diabetic patients also suffers from hypertension (Cheung & Li, 2012; Ferrannini & Cushman, 2012; Martín-Timón et al., 2014).

In this study, the prevalence of complications was low, representing only 1.7% of cases. This differs from some studies, in which it was found that systemically compromised patients are at a higher risk of developing complications (Fernandez-Feijoo et al., 2010; Bajkin et al., 2015; Rao et al., 2018). Likewise, in another study, they demonstrated that about half of the patients referred to dental schools had at least one medical complication (Mesgarzadeh et al., 2014). In the study by Abraham-Inpijn et al. (2008) 120 deaths in dental surgeries were recorded over a 10-year period in Great Britain.

It is known that the dentist has an important role in the diagnosis and assessment of risk factors for systemic diseases. For this reason, you should always assess the patient's blood pressure, ask about the medications you use, to prevent the possibility of complications during dental care, and determine the need for medical consultation, referral, and follow-up. This agrees with other studies that emphasize the need to perform a correct anamnesis and assessment of the patient's vital signs to avoid complications (Fernández-Feijoo, 2010; Lalla & Lamster, 2012; Smereka et al., 2019).

Knowledge of the prevalence of systemic changes in a given population is important for early recognition and adequate management of emergencies in the dental office, as well as the correct referral for medical consultation. According to the data collected in this study, we found that the probability of a dentist from Bahia attending a patient with some systemic alteration is 44.73%, being mainly hypertensive and diabetic patients. For this reason, it is vitally important to carry out a complete clinical history of all patients together with the measurement of vital signs, so as to avoid carrying out any possible treatment that could endanger the patient's health or even his life.

5. Conclusion

Knowledge of the prevalence of systemic changes in a given population is important for early recognition and adequate management of emergencies in the dental office, as well as the correct referral for medical consultation. According to the data collected in this study, we found that the probability of a dentist from Bahia attending a patient with some systemic alteration is 44.73%, being mainly hypertensive and diabetic patients. For this reason, it is vitally important to carry out a complete clinical history of all patients together with the measurement of vital signs, so as to avoid carrying out any possible treatment that could endanger the patient's health or even his life. Further prospective studies are recommended over a specified period of time, with the intention of standardizing data collection. This is done through a specific questionnaire applied to all research participants where the referral of the patient for medical evaluation is recorded and the subsequent recording of information about the evolution of medical monitoring.

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