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CASE REPORT

Bacteriologic study of orbitofacial prosthetics in exenterated patients

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KEYWORDS
Orbitofacial prosthesis;
Mucormycosis;
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Abstract The results of the bacteriologic samples taken from 7 orbit-exenterated patients who use orbitofacial prosthesis are presented. The objective was to describe which microorganisms colonized the prosthesis and the cavity at the beginning, at 3 months, and at 6 months. The microbiologic studies reported the presence of *Staphylococcus epidermis* and *Staphylococcus aureus* in the exenterated cavities in 57% of the patients and in the orbitofacial prosthesis in 14.5% during the first month; in the third month orbitofacial prosthesis *Staphylococcus pyrogenes* in 4 patients and exenterated cavities *S. epidermis* in 85.7%; in the 6th month *S. pyrogenes* in 28.5% (2 patients) in orbitofacial prosthesis and *S. epidermis* in 100% in the exenterated cavities. The patients who already defeated the infection were able to receive the treatment according to the antibiotic sensitivity of the microorganism and the change of the prosthesis. Once the results of the treatment are given, we suggest providing precise instructions to the patients in order to prevent infection.

PALABRAS CLAVE
Prótesis orbitofacial;
Mucormicosis;

Estudio bacteriologico en protesis orbitofacial en pacientes exenterados

Resumen Se presentan los resultados de tomas bacteriológica llevadas a cabo en 7 pacientes exenterados de órbita portadores de prótesis orbitofacial. El objetivo fue describir qué microorganismos colonizan la prótesis y la cavidad al inicio, a los 3 y a los 6 meses. Los informes

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Estudio bacteriológico; Exenteración orbitaria

microbiológicos reportaron al primer mes en las cavidades exenteradas *Staphylococcus epidermis y Staphylococcus aureus* en el 57.2%, en las prótesis orbitofaciales se encontraron *Staphylococcus aureus* en un 14.5%; al tercer mes, en las prótesis orbitofaciales *Staphylococcus pyogenes* en 4 pacientes y en cavidades exenteradas *Staphylococcus epidermis* en el 85.7%; al sexto mes *Staphylococcus pyogenes* en un 28.5% (2 pacientes) para prótesis orbitofaciales y *Staphylococcus epidermis* en el 100% de las cavidades exenteradas. Los pacientes con la infección ya manifiesta fueron susceptibles de tratamiento de acuerdo a la sensibilidad antibiótica del microorganismo y al cambio de la prótesis, y dados los resultados sugerimos suministrar indicaciones precisas a los pacientes para prevenir infecciones.

Introduction

Orbital exenteration is defined as the total removal of the tissues contained in the orbital cavity (the eye, fat, muscle, and at times the eyelid). Some of the most common causes of orbital exenteration are Mucormycosis and ocular and palpebral tumors, such as retinoblastoma, squamous cell carcinoma, or benign tumors.

Squamous cell carcinoma starts in the squamous cells, thin and plain cells in the tissue that forms the surface of the skin and the coating of the empty organs in the body. It is the second most frequent of the skin cancers, frequently occurring in people with light skin and light eyes and predominantly found in zones of the skin which are exposed to light. It can appear as exophytic lesions and vegetative or ulcerated warts, which are quickly-growing with the possibility of metastasize. It generally affects people 60 years and older, predominantly in men with a background of prolonged exposure to ultraviolet radiation. Other risk factors are heredity, tar and coal, ionizing radiation, scars, burns, chronic ulcers, osteomyelitis, and arsenic.

Mucormycosis or Zygomycosis is a chronic fungal infection that principally appears in people with immunological disorders (diabetes mellitus, especially if it is in ketoacidosis; leukemia, lymphoma, and AIDS, among others). It is caused by a fungus common in the environment, an airborne saprophyte opportunist of the order Mucorales and the class Zygomycota, that is frequently found in the ground and among decomposing vegetables; most people are exposed to this fungus every day, but people with immune system disorders are the most susceptible to this infection. Mucormycosis is a rare pycomycosis that includes species of Rhizopus, Rhizomucor, and Cunningaghamella that colonize the nostrils, paranasal sinuses, and intestines, and in any form it is labeled a vascular invasion by a wide hyphae and rarely occurring septate. The most frequent occurrence is rhinocerebral infection (infection in the paranasal sinuses and the brain), beginning as a paranasal sinus infection that progresses until the inflammation of the cranial nerves can cause blood coagulation that blocks the vessels to the brain (thrombosis). With symptoms like chronic sinusitis, it causes fever, ocular swelling and protrusion of the orbital cavity (Exophthalmos), dark nasal eschar, and flushing to the face over the skin covering the paranasal sinuses, making it painful and stiff, and one central zone can become blackened.[1–4]

The exams for diagnosing Rhinocerebral Mucormycosis include computerized axial tomography, magnetic resonance imaging (MRI), and biopsy by deep zone aspiration. The principal histologic discovery was ischemic necrosis or hemorrhaging. The standard treatment is aggressive surgery for removing all the infected dead tissue; surgical removal of the compromised tissue is critical and the patient is prone to disfigurement because it can involve the removal of the palate or nasal or ocular structures; the surgical treatment follows Amphotericin B administered in intravenous form or injected directly to the spiral fluid, repeated surgical washes by endoscopy, and the use of Filgrastim (Neupogen) to avoid the colonization by *Aspergillus* and *Candida* sp. and *Mucor*, as a preventive measure.[5,6]

The exenteration is done on the Rhinocerebral Mucormycosis, which is the most common clinical form of Mucormycosis, and it was the topic of our study because our patients had this kind of Mucormycosis. Post operational, the use of orbitofacial prosthetics is employed.[7–9]

The success of orbitofacial prosthesis depends significantly on the extension of the defect, the material from which it was made, its retention form, and some other aggregated factors, such as the installation of the microorganisms that cause some infection which can significantly alter the rehabilitation of the patient and his or her quality of life.[7,8,10,11]

The use of facial prosthesis started with the Egyptians who used artificial noses and ears. In 1500 BC the Chinese made nasal prosthesis made from wood and clay. In the 16th century Ambroise Pare described the manufacture of a nasal prosthesis using gold, silver, and paper, securing his place as a relevant figure in the development of maxiofacial prosthesis, to be followed by intellectual authors of contemporary works such as Pierre Fauchard, Delaberre, Claude Martin, Gilbert Kasanjian and Converse. In the 9th century the orbitalfacial prosthesis began to be manufactured with materials such as celluloid and vulcanized rubber, which resulted in its difficulty of preparation and diminished convenience. It was at the beginning of the Second World War that the use of liquid substances such as pre-vulcanized rubber latex, acrylic resins, and polvinilicas resins obtained satisfactory ascetic and functional results.

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