Cervicofacial Necrotizing Fasciitis and Its Relationship with Aeromona Hydrophila

Juárez-Rebollar Alejandra Giselle1*, López-Saucedo Francisco2, Juárez-Rebollar Daniel3 and Juárez-Paredes Celso Marcelo4

Abstract

Introduction: Necrotizing fasciitis is a severe polymicrobial infection with rapid progression and significant tissue destruction, which requires immediate antimicrobial and surgical management; the frequent location is in the extremities (pelvic and thoracic), genitals and thorax, its appearance being rare in the cervicofacial region, it is very rarely associated with causal agents such as Aeromona hydrophila, however, the presence of said bacillus in contaminated water can manifest as Fasciitis Cervicofacial necrotizing agent (CNF).

Material and Method: A retrospective, descriptive, cross-sectional, observational study was carried out in Maxillofacial Surgery at the “La Raza” Medical Center, for one year. All patients with a diagnosis of Necrotizing Cervicofacial Fasciitis (CNF). For one year who had cultures and blood cultures, with Aeromona hydrophila, who had been cared for in the Maxillofacial Surgery service from October 1, 2013, to October 1, 2014, were included.

Discussion: Giant oral floor cysts located under the mylohyoid muscle are usually removed extra orally. We report the case of a large dermoid cyst of the floor of the mouth, with extension at the base of the tongue, removed intraorally.

Results: A sample of 7 patients with a diagnosis of Necrotizing Cervicofacial Fasciitis was obtained; dental origin, of which 3 were women and 4 men; the mean age was 66.7 years; A correlation was made to comorbidities, the management was given by the Maxillofacial Surgery service of the “La Raza” Medical Center was surgical and clinical, with support from the central laboratory of the “Dr. Bernardo Sepúlveda Gutiérrez” National Medical Center, XXI Century, IMSS. Address: Cuauhtémoc 330, Doctores, Cuauhtémoc, 06720, Mexico City, Mexico.

Received Date: 08-10-2020 Published Date: 08-25-2020

Copyright © 2020 by Juárez-Rebollar AG, et al. All rights reserved. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
Aeromona Hydrophila. Antibiotic was administered based on the antibiogram obtained individually with specificity for each case as reported in the cultures.

**Discussion and Conclusion:** CNF is an entity rarely associated with Aeromona hydrophila, it is common to find another type of microbiota in this entity, however, it should be known that this A. hydrophila bacillus is frequently isolated in contaminated water and the patient can acquire it by performing any daily activity, more if you have any injury or previous immunocompromise. The importance of medical-surgical management will determine the prognosis of the patient, the correct extension of debridement and resection will allow delimiting the CNF and the multidisciplinary management together will reduce complications (septic shock, multiple organ failure, death) if it is carried out on time.

**Keywords:** Fascitis; Necrotizing; Aeromona hydrophila; Wounds.

**Introduction**

Necrotizing or necrotizing fasciitis is a severe, progressive bacterial infection that involves the fascia and surrounding structures with extension to the tissues and may be accompanied by systemic toxicity. It is called "craniocervical fasciitis" (CCF) is the way to refer to Necrotizing Fasciitis located in the head and neck (CNF). Over the years, Necrotizing Fasciitis has had a long list of names for it, for example, streptococcal gangrene, synergistic cellulitis, non-clostridial anaerobic cellulitis, Necrotizing cellulitis, Fournier’s gangrene, Necrotizing erysipelas, among others. All based on location, characteristics, etc [1]. The importance of immediate diagnosis and management, as well as the correct surgical approach, is one of the main factors that will determine its evolution, prognosis and mortality; reports are mentioning it has a high mortality rate of up to 75-100% [2]. *Aeromona hydrophila* is a facultative anaerobic gram-negative (G-) bacillus of the *Vibronaceae* family that resembles the Enterobacteriaceae family, of which 14 species have been described. Aeromonas hydrophila are oxidase-positive, move through a polar flagellum, and are frequently isolated in stagnant water, synthesize cytotoxic enterotoxin (Ent-ctx) that can lyse erythrocytes, causing irreversible damage in various cell lines, inducing the accumulation of fluids in the intestine of different animal models and are lethal when inoculated intravenously. This Ent-ctx is the main virulence factor associated with the enteropathogenesis of Aeromonas and triggers gastrointestinal diseases associated with this species [3]. Aeromonas are known to cause gastroenteritis, skin and soft tissue wound infection (from mild cellulitis to fulminant myonecrosis). When infections are caused by Aeromona hydrophila they can cause eye infections, osteomyelitis, peritonitis, acute cholecystitis, respiratory tract infections, and rarely septicemia. Exposure with contaminated water has been reported in wound infection by Aeromonas hydrophila, as well as its relationship with snakebite wounds. Among the complications of more invasive infections by Aeromonas species is septicemia. Two mechanisms of action of *Aeromona hydrophila* are mentioned: 1.- the invasion of the subcutaneous tissue through a wound in the skin, and 2.- sepsis induced by this bacterium that produces metastatic lesions in the subcutaneous cellular tissue. Thus, in healthy patients who have a wound, or had it previously, while bathing or washing with waters...
infected by this germ (*Aeromona Hydrophila*), the infection is usually delimited and they respond adequately to surgery or antibiotic treatment. However, immunosuppressed patients can develop necrotizing fasciitis that can even compromise their life, even without observing a gateway [4]. *Aeromona hydrophila* is commonly the cause of opportunistic infections mainly in immunocompromised patients (patients such as diabetics, kidney and liver disease, neoplasms, among others); it causes soft tissue infections, rarely produces necrotizing fasciitis, and very rarely the soft tissue infections it produces are characterized by extensive necrosis of the superficial fascia to adjacent tissues. In the absence of severe bacterial infection, the appearance of cellulitis is rapidly progressive within the first 24-48 hours, after an injury or surgical wound it is highly suggestive of infection by group-A *β*-hemolytic streptococcus, or species of clostridium. Comparing with the Microbiota in other infectious processes, we find that gas gangrene with myonecrosis is usually due to clostridium infections, particularly *Clostridium perfringens*. Non-clostridial gas-forming infections can be caused by an anaerobic coliform bacillus such as Escherichia coli, but are not commonly related to *Aeromona hydrophila* [5].

**Background**

Necrotizing Fasciitis is a highly lethal soft tissue infection that causes destruction and necrosis of skin, subcutaneous tissue, fascia and muscle, and can even involve other structures [6]. The pathogenesis is by inoculation of bacteria into subcutaneous tissues through any break in the skin or mucosa, including sites where catheters are found or injections have been received, sites secondary to trauma, ulcers, abscesses, fistulas and even spreading to a distant site mainly hematogenously. It most frequently affects extremities, perineum and genitals [7]. Necrotizing Fasciitis is classified into 4 types: Type I FNC: they are polymicrobial, they often occur in immunocompromised patients (diabetics, the elderly, chronic kidney failure, after trauma or surgery) in ancient times they called it "Carnivorous disease"; type II CNF characterized by group A *Streptococci* or *Staphylococcus aureus* microbes, resistant to acquired methicillin (MRSA), having predominance at certain ages or secondary to trauma or surgical wound. Type III CNF has been related to microorganisms such as *Aeromona hydrophila*, *Vibrio vulnificus* (both have been found in lesions washed with fresh or saltwater), another microorganism found in type III CNF is *Clostridium perfringens* which has a great destructive capacity such as gas gangrene, is characterized by crepitus on palpation during physical examination. And type IV CNF associated mainly with fungal organisms, highlighting the presence of *Candida*, appears mainly in immunocompromised patients and traumatic wounds or burns [6,7]. Due to the aforementioned and based on a bibliographic review, the few reports of CNF associated with *Aeromona hydrophila* can be seen, since it is usually associated with any of its types (I, II, III and IV) by other microorganisms. There are few studies on CNF and its relationship with *Aeromona hydrophila*, finding reports such as that of Van Der Burg et al. That report 8 cases of necrotizing fasciitis due to *Aeromona hydrophila*, of which 5 had diabetes mellitus, two liver problems and one in the final stage of liver failure.
secondary to chronic alcohol abuse [5]. Shih-Yu Chou et al. Report a 73-year-old patient with myelodysplastic syndrome, who had contact with treated water, developing preseptal cellulitis with extension to the orbicular region, complicating a systemic inflammatory response syndrome associated with cellulitis of the peri orbital region, managing it with 14 days of antibiotic (quinolones and 3rd generation cephalosporin), whose culture was reported by A. hydrophilas. Emphasizing that the infection reported by this agent occurs more frequently in infra-cervical regions (below the neck), highlighting its rapid progression to septicemia, mainly in immunocompromised patients. Shin Yu Chou reports a rate of septicemia due to A. hydrophilas between 56%-75% [8]. Fernández Arroyo et al., Present the case of a 37-year-old man, with no medical history, with painful swelling in the right gluteus, syndrome of Systemic inflammatory response, multitreated, progressing to septic shock and later to multiple organ failure, with medical-surgical management, reporting A. hydrophila in the wound culture and blood cultures, unfortunately, there was a fatal outcome [4]. Van Der Burg et al report a 58-year-old patient with no significant history after a vehicular accident in contact with contaminated water, hemodynamically stable with an exposed fracture, debrided 30 hours after the accident and reduced with external fixatives and impregnation with gentamicin, at 48 hours deteriorates and presents septicemia, on the 5th day the infection spreads progressing to necrosis when performing a wound culture, the presence of Aeromonas hydrophila is confirmed, it progresses to multiple organ failure, finding Pseudomonas aeruginosa in the culture, having a fatal outcome [5]. Kuo-Chun Liao et al. Report a 60-year-old patient with septicemia, having a pathological history: liver cirrhosis and uncontrolled type 2 diabetes mellitus, the patient required pharmacological and surgical management, intensive therapy, multiple organ failure and had a fatal outcome. In the wound culture report, gram-negative bacilli of the Aeromonas hydrophila type were identified [9]. Most cases of Necrotizing Fasciitis have been located in the extremities (pelvic and thoracic limbs, thorax and/or abdomen, genital or perianal region) as mentioned by Stevens and Bryanto among other authors; but there are few cases of cervicofacial CNF related to Aeromonas hydrophila. Within the clinical characteristics of Necrotizing Fasciitis in its early stages, it seems a normal surface, however, when the infections are deeper it involves structures, the first symptoms beginning at approximately 24 hours. Wong and Wang propose three clinical stages: the first mention pain, fever, extensive erythema, edema, and heat, in this phase it can be confused with cellulitis or minimal tissue infection with or without necrosis. In stage II, blisters or ulcers can be found, the microorganisms affect more surfaces and deeper structures, presenting crepitus, nervous or sensory changes, and/or generalized dark coloration secondary to necrosis in stage III. The transition from stage II to III is characterized by dissemination, necrotic tissue, cellulitis becomes necrosis, presence of infiltration in other organ systems, hematogenous dissemination, hence the patients develop toxic shock syndrome and septicemia, causing the death, if not diagnosed and treated immediately [10,11]. To diagnose Necrotizing Fasciitis, an adequate medical
History and clinical examination must be had, some signs reported by authors such as Bisno and Chambers, among other authors, are similar to those of local soft tissue infection (erythema, edema, heat and pain) there may be systemic signs (fever, hemodynamic instability), in a more advanced stage there is tissue crepitation (since the microorganisms produce gas), rapid progression so immediate attention is necessary [12,13]. Wong describes a system to evaluate CNF in a study of 948 patients, based on laboratory studies giving values to elements such as hemoglobin, creatinine, sodium, glucose, C-reactive protein and white blood cell count [11,14]. To complement the diagnosis, imaging studies are an excellent option, highlighting that treatment should not be delayed since the patient deteriorates rapidly, the tomography is useful looking for evidence of gas in soft tissues, accumulation of fluid and inflammatory changes underneath. Fascia [12,14]. Some studies, such as that of Castleberg, Jenson and collaborators, suggest the use of ultrasound since it can be performed quickly to detect the presence and dormancy of abscesses or the presence of emphysema (gas in the facial layer) [15]. However, the gold standard is still computed tomography; although since it is soft tissue, magnetic resonance imaging has been suggested and emphasized, allowing a better resolution for soft tissue, compared to that offered by computed tomography; so it allows to see the facial thickening caused by the infection, which would confirm the diagnosis of Necrotizing Fasciitis [16]. Although it is mentioned that since magnetic resonance imaging is more sensitive to detect involvement in the deep fascia, the presence of necrotic tissue, mainly in deep tissue, could be overestimated [17]. Generally, obtaining resonance images tends to take longer than performing a tomography, which is reflected in a delay in surgical management, the important thing in the diagnosis and management of necrotizing fasciitis is immediate treatment since the delay can have significant adverse results, the only way to reach the diagnosis is surgical exploration since when the surgeon has the wound exposed, it will be possible to inspect the areas of necrosis, perform blunt dissection and observe undercuts around the tissue at the expense of the infection, highlighting the taking samples of diseased tissue with healthy and exudate, as well as its collection for culture and sensitivity tests for the causative microorganism [12]. The tissue should be debrided as necessary and as soon as possible, the debridement delay of Necrotizing Fasciitis greater than 24 hours is associated with a higher mortality rate, in many cases it requires advanced management in therapy intensive care (ICU) mainly cases that develop septic shock or other complications, highlighting that in the cervicofacial region it is common that they require advanced management of the airway, requiring endotracheal intubation on many occasions [18]. The rapid administration of broad-spectrum antibiotics is important due to the severity of Necrotizing Fasciitis by producing exotoxins [19]. Since the causative microorganism of the disease is detected, through culture, antimicrobial management must be reduced and directed to the susceptibilities of the biota present and continue it for the necessary time depending on the area and evolution, some treatments are longer due to penetration and/or progress; Antibiotics should be continued until the infection is controlled.

DOI: https://doi.org/10.3791/Mapsci-2582-3736-2(4)-048
and the local signs and symptoms of the infection have resolved, a minimum average of 5 days is estimated, estimating that it can take even weeks, mentioning the average hospital stay according to studies such as Misiakos and Van Stigt, among others is approximately 46 days in hospital [13,20].

**Objectives**

The main objective was to determine if there is a relationship between Cervicofacial Necrotizing Fasciitis (FNC) and *Aeromona hydrophila* in patients treated in the Maxillofacial Surgery service of the “La Raza” National Medical Center for one year (October 1, 2013, to October 1, 2014); to determine the comorbidity factors for developing necrotizing fasciitis and to identify other microorganisms present in the cervicofacial necrotizing fasciitis biopsy by cultures.

**Material and Methods**

A descriptive, retrospective, cross-sectional study was carried out during one year from October 1, 2013 to October 1, 2014. The study universe consisted of all patients with a diagnosis of odontogenic cervicofacial necrotizing fasciitis treated in the Maxillofacial Surgery service at the "La Raza" National Medical Center for one year from October 1, 2013 to October 1, 2014.

**MATERIAL:** Equipment: static incubator, blender, spoons, bottle adapters, sterile bags. Reagents: The following reagents allow the identification of aeromona hydrophila: Butterfield's phosphate diligent (BDP), sterile mineral oil N, N-dimethyl p-phenylenedamine, monohydrochloride (1% aqueous solution). Culture media: tricapsein jackpot broth, added with 10 micromiliters of ampicillin (TSBA), ampicillin starch agar (SA) pay triple sugar iron (TSI), nutrient agar, mannitol fermentation broth with Andrade indicator, Moeller: arginine decarboxylase, ornithine dextercocylase thistle, decarboxylase base broth, Andrade indicator glucose fermentation broth, and bile esculin agar. 

**METHOD:** All patients with a diagnosis of odontogenic Necrotizing Fasciitis were captured and treated by the Maxillofacial Surgery service of the Specialties Hospital "Dr. Antonio Fraga Mouret", of the National Medical Center "La Raza" of the Mexican Institute of Social Security (IMSS), a biopsy and blood culture was taken, with the support of the Central Laboratory and the Microbiology area, cases with “Aeromona Hydrophila” will be reported if it is found in said sample.

**Analysis of Data**

Information from clinical records was collected and noted on a checklist. The data obtained was collected on a collection sheet. The results are presented in means and the relationship between the variables will be analyzed.

**Results**

A sample of 7 patients with a diagnosis of Necrotizing Cervicofacial Fasciitis was obtained; all were of odontogenic origin, with hospital admission in charge of the Maxillofacial Surgery service of the IMSS “La Raza” Medical Center; of which 3 were women and 4 men; the mean age was 66.7 years; with a minimum rank of 40 years and a maximum of 86 years. Regarding comorbidities (Table 1).

Two patients reported no illnesses when taking a medical history upon admission to the Maxillofacial Surgery service, 4 patients...
had Systemic Arterial Hypertension, 3 were diabetic and one patient reported Addison’s disease; All patients underwent tissue biopsy and blood culture in fever peaks. The biopsies were performed during surgical management which was based on resections (removal of necrotic tissue), sending the biopsy to Pathology and Central Laboratory (taking a sample in a syringe and two tissue samples, one fixed in 10% formalin and the other in 0.9% saline solution) to perform bacterial culture and biopsy respectively. The taking of cultures was proportional to the number of surgical events, in each surgery a sample was taken and sent to Pathology and Central Laboratory respectively (Graph 1). All patients underwent blood culture during peak fever (if they presented at any time during their hospital stay).

**Graph 1:** Age and number of causal species found in blood culture and biopsy cultures in CNF.

![Graph 1: Age and number of causal species found in blood culture and biopsy cultures in CNF.](image)

**Graph 2:** Number of cultures according to the species of bacteria developed in CNF.

![Graph 2: Number of cultures according to the species of bacteria developed in CNF.](image)

There were only three patients of which their blood cultures reported the development, two of them presented Gram (+) and Gram (-) and the third Gram (+) and Facultative aerobes. For tissue cultures, samples obtained during tissue

---


DOI: [https://doi.org/10.37191/Mapsci-2582-3736-2(4)-048](https://doi.org/10.37191/Mapsci-2582-3736-2(4)-048)
resections were counted (surgical washings were performed every 48 hours and dressings every 8 hours daily). 5 patients had bacterial development in the first culture, the biota that was reported was: (Graph 2) Candida Albicans in two cases; Candida Krusei and Morganella morganii in another case, in another case Coryneform bacilli and in the fifth case Enterobacter aerogenes.

**Table 1:** Relationship of comorbidities, microbiota and bacterial cultures in Odontogenic Cervicofacial Necrotizing Fasciitis.

<table>
<thead>
<tr>
<th>Invoice</th>
<th>Gender</th>
<th>Age</th>
<th>Comorbidities</th>
<th>Blood Culture</th>
<th>Biopsy</th>
<th>Bacterial Culture 1</th>
<th>Bacterial Culture 2</th>
<th>Bacterial Culture 3</th>
<th>Bacterial Culture 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>40</td>
<td>Apparently healthy</td>
<td>No development</td>
<td>X</td>
<td>No development</td>
<td>No development</td>
<td>No development</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>68</td>
<td>Hypertension, Diabetes</td>
<td>No development</td>
<td>X</td>
<td>No development</td>
<td>No development</td>
<td>No development</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>55</td>
<td>Adisson's disease</td>
<td>No development</td>
<td>X</td>
<td>Candida albicans</td>
<td>E Coli</td>
<td>No development</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>86</td>
<td>Hypertension, Diabetes</td>
<td>No development</td>
<td>X</td>
<td>Candida Krusei</td>
<td>Morganella morganii</td>
<td>Aeromona Hydrophila</td>
<td>Trichosporon asahii</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Morganella Morganii</td>
<td></td>
<td>Pseudomona aeruginosa</td>
</tr>
<tr>
<td>5</td>
<td>Female</td>
<td>68</td>
<td>Hypertension, Diabetes</td>
<td>Gram (-)</td>
<td>X</td>
<td>Candida albicans</td>
<td>G+ bacilli</td>
<td>No development</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Male</td>
<td>80</td>
<td>Apparently healthy</td>
<td>Gram (+) Facultative aerobes</td>
<td>X</td>
<td>Coryneform bacilli</td>
<td>No development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Male</td>
<td>70</td>
<td>Hypertension</td>
<td>Gram (-)</td>
<td>X</td>
<td>Enterobacter aerogenes</td>
<td>Candida albicans</td>
<td>Enterobacter aerogenes</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1:** 1a: Postoperative photograph at 48 hrs of a patient with CNF, necrosis (yellow arrow), penrose that goes from the anterior face of the neck to the supraclavicular approach, erythema (green arrow), 1b: Photograph after the third surgical resection, it is observed in the center of the wound with areas of granulation tissue and whitish areas (red arrows) penrose to permeabilize the anterior face of the neck with a supraclavicular approach.
In a second culture three patients no longer presented bacterial development, of the other 4: only in one was *Aeromonas Hydrophila* developed, and in the same case Morganella morganii was isolated, in another case Gram (+) bacilli were found, the third case presented E. coli and the last case Candida Albicans.

Later, four patients required a third tissue sample, of which only two developed, one with Enterobacter aerogenes and the other with Trichosporon asahii and Pseudomonas aeruginosa; This last patient was the only one in the sample that required a fourth culture from tissue collection showing the development of Candida Albicans; Unfortunately, the evolution of the latter patient was torpid and with the presence of complications such as subsequent septic shock, multiple organ failure and had a fatal outcome. Figure 1a shows the example of the case of a patient with a diagnosis of odontogenic necrotizing fasciitis, in the submental region, bilateral submandibular region and the anterior cervical area subjected to resection of necrotic tissue, with the persistence of necrosis in the skin, subcutaneous tissue and muscle, a penrose-type drain was placed through the exit of exudate of purulent material directed towards the right supraclavicular space, in the first culture, the patient reported bacterial development (*Candida Krusei* and *Morganella morganii*), *Aeromonas Hydrophila* and *Morganella Morganii* were found in a second culture. A wide resection was performed again in the operating room, eliminating the necrotic tissue and sending the sample for study showing the development of *Trichosporon asahii* and *Pseudomonas aeruginosa*; On this occasion, a drain was again left in order to keep the communication of the right supraclavicular space with the anterior face of the neck permeable, the patient had some days with improvement when showing granulation tissue in some areas of the surgical wound and without observing areas necrotic, as shown in figure 1b, However, he presented a relapse and deterioration of the general state of health, conditioning septic shock and presenting necrotic edges again, he underwent another surgical time with his respective shipment of sample to culture, finding Candida Albicans; Unfortunately, despite the improvement of the temporary wound, the complication of the general condition of the patient, his clinical conditions and comorbidities, as well as hemodynamic instability and systemic compromise, caused multiple organ failure and his subsequent death. The rest of the patients required surgical scrubs in the operating room every 48 hours and dressings (with local anesthesia and administration of intravenous analgesics) every 8 hours; in addition to maintaining antibiotics based on the antibiogram produced individually with specificity for each case as reported in the cultures.

**Discussion**

In this study, as well as the one reported by Shin Yu Chou [8], there were two cases of Necrotizing Cervicofacial Fasciitis that had as a complication septic shock, one of them developed multiple organ failure and his subsequent death, the other case required management by the Unit Intensive Care and had a prolonged hospital stay, however survived. Fernández Arroyo [4] reports a case of a patient in his fourth decade of life with Necrotizing Cervicofacial Fasciitis who had severe complications at Shin Yu Chou [8], which coincides with the study.
that is presented, however, the mean age differs from this article since the mean age of this work was 66.7 years; with a minimum rank of 40 years and a maximum of 86 years; and in the study presented by Fernández et al. the patient was 37 years old. The treatment granted in the Maxillofacial Surgery service of the "La Raza" National Medical Center, IMSS; is adequate and coincides with studies by other authors who have similarly managed odontogenic cervicofacial necrotizing fasciitis (regardless of the biota found) with antimicrobial therapy, debridements and/or resections, as mentioned by Horneman [21], Meik [22], Urrestarazo [23], García [24] and Silva [25], among others. It should be noted that this study, like that of Acosta Garcia and Aguilar [24], was carried out in Mexico, however, they mention that they isolated *Aeromona salmonicida*, the study that they present was carried out in the same year that this study was carried out: 2014. In their article they mention the 14 species of aeromonas: *A. hydrophila*, *A. bestiaryum*, *A. salmonicida*, *A. caviae*, *A. media*, *A. eucnrenophila*, *A. sobria*, *A. veronii*, *A. jandaei*, *A. encheleia*, *A. schubertii*, *A. trota*, *A. allosaccharophila* and *A. popoffii*. Referring based on what was mentioned by Castro [26] and another work by Bravo et al. [27] who say that within some clinical samples, within the species found, *A. caviae*, *A. veronii*, *A. sobria* and *A. hydrophila* have been reported, of these It is mentioned that of the 14 species of aeromonas that exist, these last 4 represent approximately 90% of the strains of the genus identified in Mexico. Reporting as less frequent: *A. jandaei* and *A. schubertii*; and the remaining 10% are made up of *A. bestiaryum*, *A. salmonicida* (3.3%), *A. media* and *A. trota* (6.7%). For what with all the more reason it gives a guideline to continue with this line of research.

**Conclusion**

Cervicofacial Necrotizing Fasciitis is a rare entity in the head and neck region, and even rarer if its relationship with a specific microbiota is sought, in this case, *Aeromona Hydrophila* was the causal agent. The studies reported in the literature have been in isolated cases and more frequently located in the extremities (thoracic and pelvic limbs). Generally, the microbiota associated with FNC, of the odontogenic type, in different studies has been with mostly anaerobes, with few doctors, but there is no registry (multicenter, neither in Mexico nor in this Medical Center where the present study), where its relationship with *Aeromona Hydrophila* is reported. That is why the approach and justification of plague study arises; Since *Aeromona Hydrophila*, being a bacillus that is isolated in an uncommon way in cultures of Necrotizing Cervicofacial Fasciitis, or in odontogenic infections, and being able to be in media so common or so available to anyone, (remembering that it is usually found in contaminated water regardless of whether it is piped or salty or other), there is the possibility of infection mainly by contact and even more so if the person has a background disease or a wound that even when washing it could become infected by this bacillus. In this study, carried out for a year in one of the medical centers with the highest recruitment and reach of patients in different regions of the country, there was a considerable sample of 7 patients and only one of them presented *Aeromona Hydrophila* in culture; the rest of the cultures and patients did not develop for this microorganism. The importance of this study is that currently the work team that
has carried it out is committed to emphasize and seek to improve its work to provide educational and research contributions regarding the pathological entity per se (Necrotizing Cervicofacial Fasciitis) seeking improve and carry out a management protocol to act on time, prevent and provide a better prognosis, always in search of the benefit of patients, adhering to the different guidelines suggested by the Ethics Committee as well as the Declaration of Helsinki and the General Health Law, likewise taking care of the integrity and anonymity of the participants.

Acknowledgment

We show appreciation for the support of the Master of Science Julio Elias Alvarado Yaah of the Central Laboratory of Epidemiology located in the National Medical Center "La Raza" of the Mexican Institute of Social Security, to the Area of the Central Laboratory Department of the Hospital de Especialidades "Dr. Antonio Fraga Mouret ", UMAE“ La Raza ", also The rest of the laboratory staff, at the service of Infectology, operating room and x-rays, who directly or indirectly helped patient care.

Financing

We have not received financing nor do we have sponsors to carry out this study.

Conflict of Interest

Neither the authors nor any member has a financial or interest relationship (currently or in the last 12 months) with any entity producing, marketing, reselling, or distributing health care products or services consumed by, or used in, the patients.

References


DOI: https://doi.org/10.3791/Mapsci-2582-3736-2(4)-048