Facial paralysis as a result of severe cervico-facial necrotizing fasciitis: a case report

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Abstract

Necrotizing fasciitis (NF) is a progressive, rapidly spreading, inflammatory infection characterized by necrosis of the deep fascia, with secondary effect on the subcutaneous tissue and differing degrees of toxicity. It is a fairly rare entity in the cervico-facial region where it usually originates from odontogenic infection; gingivitis or pulpitis. A case of a 43 years old woman suffering from cervico-facial NF with facial paralysis who is also HIV-positive is presented. Management was essentially aggressive surgical debridement and antibiotic therapy. Residual effects included scarring and facial paralysis. Team approach in the management of NF is advocated.

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Introduction

Necrotizing fasciitis (NF) is a progressive, rapidly spreading, inflammatory infection characterized by necrosis of the deep fascia, with secondary effect on the subcutaneous tissue and differing degrees of toxicity (1). Its occurrence is associated with immunocompromised states; e.g. diabetes mellitus, cancers, alcoholism, vascular insufficiencies, organ transplant, Human Immunodeficiency Virus (HIV) or neutropenia (2-4).

NF is a fairly rare entity in the cervico-facial region. When it occurs, usually it originates from odontogenic infection; gingivitis or pulpitis (2,5). Trauma involving the jawbones e.g. mandibular fractures or surgical operations in the oral and perioral region may form other routes of microbial entry. Other possibilities include Intramuscular (IM) or Intravenous (IV) injections, insect bites, burns, local ischaemia and hypoxia in patients with systemic illnesses such as diabetes mellitus and the use of non-steroidal anti-inflammatories such as ibuprofen (6). Although some few studies have reported either a male or female preponderance, generally NF has no sex predilection (7). It affects children and adults alike with mean age between 38 and 44 years (8,9).

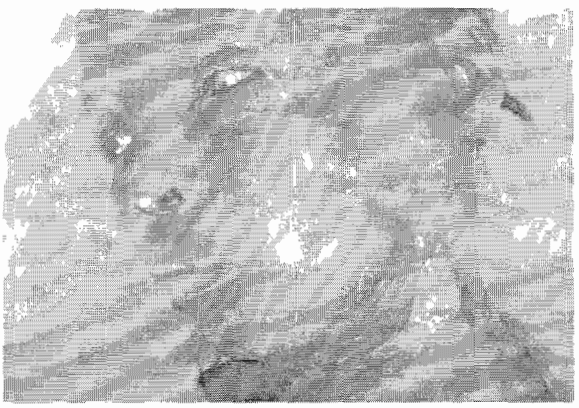
A history of toothache, dental extraction or recent trauma in the facial region often precedes cervico-facial NF. Idiopathic causes are however, not uncommon. Typically, initially there is pain at the local site, patient appears moderately to severely toxic followed by other important signs like tissue necrosis, putrid discharge, bullae and gas production. Characteristically, under the necrotic fascia, the muscular layer is left intact, appears red in colour with areas of bleeding (Fig. 1). A thorough search of the literature revealed only one previously reported case of NF that resulted in facial paralysis (2). We report one more case of severe cervico-facial NF that resulted in facial paralysis; the clinical features management and resultant morbidity are discussed.

Report of a case

In late August 2006 a 43 yrs old woman reported at St. Francis Hospital, Ifakara district complaining of a toothache, swelling on the left side of the lower jaw and inability to open the mouth. Since the tooth could not be extracted due to trismus, she was given a course of antibiotics and analgesics (ampiclox and diclofenac) for 10 days. Despite the medication the swelling progressively increased in size and her condition worsened. This prompted the patient to travel to Kibaha to seek help from relatives. In the interim period the swelling burst spontaneously releasing foul smelling pus. She reported at the Kibaha Designated District Hospital on 13/09/2006 where she was immediately referred to the Oral Surgery Department, Muhimbili National Hospital.

She is a single mother of 4 children all of whom are alive and healthy. She is a primary school leaver peasant, occasionally drinks alcohol but does not use tobacco.

Figure 1. Patient few days after debridement showing loss of skin and fascia in the cervical and periorbital regions*



The patient presented with general body weakness and a swelling involving the left temporal area, periorbital region (the left eye could not be opened), pre auricular region extending down to the left clavicular region. There was an open wound on the left submandibular region, which was discharging foul smelling pus. Some necrotic material was apparent in the wound but the body temperature was about normal. The face was pulled to the right side and the patient could not form wrinkles on the left side of the forehead or whistle since the mouth was similarly pulled towards the right side. She could not open the mouth due to severe trismus but fetor ex ore could be felt.

Investigations included a full blood picture, Elisa, ESR, urinalysis, random blood sugar, pus for culture and sensitivity and X-ray skull.

Daily thorough surgical debridement involving excision of the entire necrotic material until viable tissue was reached and daily irrigation with 3% hydrogen peroxide followed by eusol was done during the first week. Medication included intravenous powercef 1gm once daily and metronidazole 400 mg. 8 hrly (antibiotics), diclofenac 75 mg. 8 hrly for 5 days (analgesic) and metrogel topical application. Debridement was stopped once the wound was clean but antibiotics continued for 14 days.

The laboratory investigations results were as shown in Table 1.

Table 1. Results of blood investigations

ESR	Hb %	Liver function			Differential Count				R BG	ELISA
		Alb	Glob	TP	Neutr	Mono	Eosino	Baso		
12 mm/hr	5.83 g/dl	28	63	91	67.9%	9.08%	1.75%	1.35%	5.56 mmol/L	+ve

The pus culture and sensitivity results showed a growth of Klebsiella spp that were sensitive to gentamicin, amikacin and ciprofloxacin. Urine specimens showed epithelial cells and some traces of proteins.

X-rays revealed a carious lower left second molar, which could not be extracted because of severe trismus. On third day the condition of the patient was slightly better

The patient has currently improved and is out of danger, the general symptoms are over but the wounds on the left cervical region, the periorbital (L) swelling and facial paralysis persists (Fig. 2).

*** The patient gave a written consent to produce the picture**

Figure 2. Facial paralysis: deviation of the left face and failure to close the left eye**.

Discussion:

In Tanzania and indeed in most developing countries optimal treatment in remote areas is hampered by many factors that include ignorance, non-availability of qualified personnel and social economic factors among others. Although the management of NF in the cervico-facial region basically follows the same principles as elsewhere in the body, the possibility of spread due to abundance of fascia in the potential spaces of cervical region, closeness to the chest and mediastinum and the ensuing morbidity calls for the special attention of oral-maxillofacial surgeons.

This is the second report of NF-related facial paralysis, the first one was published in the year 1999 (2). The severity of the infection and the duration that pus has been in contact with the facial nerve led to the resultant damage. Therefore, commonly held views that NF is confined to deep fascia and the subcutaneous tissue, sparing deeper structures such as muscles, blood vessels and nerves (9-11) need to be observed with caution in cases occurring in the cervico-facial region.

The clinical features of NF are to a large extent indistinguishable from infection of fascial spaces or early stage of odontogenic abscess. As the condition progresses the patient is overwhelmed by bacterial toxins and enzymes produced by a wide variety of microorganisms which act to amplify the inflammatory response. The initial necrosis appears as a massive undermining of the skin and subcutaneous tissue. When the skin is opened yellowish-green necrotic fascia is apparent. Delay in medical intervention will lead to secondary involvement of deeper muscle layers and the resulting systemic toxicity due to septicaemia may lead to rapid death (12).

This patient being reported started using broad-spectrum antibiotics several weeks earlier at Ifakara, before reporting at Muhimbili, which modified the actual constituent organisms. As a result only Klebsiella spp. were cultured. The organisms were sensitive to gentamicin, amikacin and ciprofloxacin. Some of these antibiotics are fairly expensive and all of them are not included in the standard kits of essential drugs that are supplied by the government to all health centres and dispensaries in the country. The organisms were resistant to chloramphenicol and amoxycillin ironically both of these are among antibiotics supplied in the essential drugs kit.

**** The patient gave a written consent to produce the picture**

The seriousness of the clinical problems facing victims of NF is compounded not only by the lack of competent manpower but also the lack of essential tools like culture and sensitivity facilities and appropriate antibiotics. Furthermore, the delicate and time-consuming surgeries in the management of NF sometimes require the expertise of several surgical specialties depending on the resulting devastation (13,14). For instance, in a patient who had lost skin over a big area, skin grafting by a plastic surgeon may be necessary.

The association of NF and underlying systemic conditions calls upon concerted approach during patient management. The present patient was HIV-positive. Unfortunately, the CD_4 cell count could not be done due to unspecified reasons. Nevertheless, the urgency of counseling and referral to a physician cannot be over-emphasized.

The current patient could not close the left eye, thus, predisposing it to injury from foreign objects. Her problems are compounded by unsightly deviation of the left face towards the right, resulting in a grotesque distortion of her appearance. Facial paralysis due to cervico-facial NF has been reported only once by Simon & Matee (2) without any substantial follow-up. Review of the literature did not help our predicament in attempting to assist the patient because there were almost no precedents that could act as eye opener in comprehensively dealing with the accompanying morbidity.

It should be apparent from this case that cervico-facial NF could present the specialty with more challenges than those commonly known, which are focused on dealing with the involved fascia, skin and soft tissues only (15). Accurate diagnosis and prompt management would lessen the suffering of patients. Aggressive surgical maneuvers that include thorough debridement and concomitant use of selective broad-spectrum antibiotics is obligatory. A team approach is advisable to effectively handle the underlying medical condition (e.g. HIV infection) and correction of the surgical defects. It is necessary to make long-term follow-up to ascertain whether the facial paralysis is transient (as was reported by others) (16) or permanent.

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References

1. Robertson BJ, Happer JL, Janich EC. Mortality associated with cervicofacial necrotizing fasciitis. Oral Surg Oral Med Oral Pathol Oral Radiol, Endodont. 1996;82:264-270.
2. Simon E, Matee MIN. Cervico-facial necrotizing fasciitis occurring with facial paralysis: Case report. East Afr Med J. 1999; 76:472-474.
3. Lee W, Cotto-Cumba C, Meyers RAM. Cervical necrotizing fasciitis of odontogenic origin. A case report and review of 12 cases. J Oral Maxillofac Surg 2000;58:144-151.
4. Ugboko V, Owotade FJ, Ajike SO, Ndukwe KC, Onipede AO. A study of orofacial bacterial infections in elderly Nigerians. SADJ 2002;57:391-394.
5. Sethi A, Sabherwal A, Puri R, Jain P. Cervico-facial necrotizing fasciitis: An unusual complication of chronic suppurative otitis media. J Laryngol Otol.2006;120(3):E18.
6. Onando A, Marrone C, Nicoli N, Tamburello G, Rizzo A, Pagliaro L, Cottone M, D'Amico G. Fatal Necrotizing fsciitis associated with intramuscular injection of non-steroidal anti-inflammatory drugs after uncomplicated endoscopic polypectomy. J Infect 2006;Oct 17 (Ahead of print).
7. Melney FL. Haemolytic Streptococcus gangrene. Arch Surg 1924;9:317-321.
8. Zuloaga-Salcedo S, Constreras-Ruiz J, Domignez-Cheri J, Vega-Memije E. An approach to the management of necrotizing fasciitis in neonates. Int Wound J 2005;2:178-180.
9. Wakhlu A, Chaudhary A, Tandon RK, Wakhlu AK. Conservative management of necrotizing fasciitis in children. J Paediatr Surg 2006;41:1144-1148.
10. Smeets L, Bous A, Lecoq J, Damas P, Heymans O. Necrotizing fasciitis; diagnosis and treatment. Rev Med Liege 2006;61:240-244.

11. Cater PS, Banwell PE. Necrotizing fasciitis; a new management algorithim based on clinical classification. Int Wound J 2004;1:189-198.
12. Bacerak JM, Sisto JM and Bosack RC. Cervicofacial necrotising fasciitis. Report of the three cases and review of the literature. J Oral Maxillofac Surg 1988;46:450-459.
13. Backer T, Bossyut M, Schoenaers J. Management of necrotizing fasciitis of the neck. J Cranio-Maxillofac Surg 1997;24:366-371.
14. Hanna BC, Delap TG, Scott K, Sinclair S. Surgical debridement of craniocervical necrotizing fasciitis: the window of opportunity. J Laryngol Otol 2006;120:702-704.
15. Elner VM, Demirci H, Nerad JA, Hassan AS. Periocular necrotizing fasciitis with visual loss, Pathogenesis and treatment. Opthalmology 2006; September (Ahead of Print).
16. Yamaoka M, Furasawa K, Kiga M. Necrotizing buccal and cervical fasciitis. J Cranio-maxillfac Sug. 1990;18:223-224.

Doctor, he is too coward. Better fix a matcho heart in him