

Nontuberculous mycobacteria infection after mesotherapy: Preliminary report of 15 cases

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Abstract

Background Mesotherapy is an increasingly used technique which is currently causing several mycobacterial infections owing to contaminated substances being injected, and also to poor aseptic measures being held by nonprofessional practitioners.

Patients and methods We collected 15 cases of nontuberculous mycobacteria (NTM) infection after mesotherapy in a 6-month period.

Results All patients were female with ages ranging from 19 to 52 years; the main substances injected were procaine and lecithin, and the time between mesotherapy and the appearance of the lesions varied between 1 and 12 weeks. Clinical lesions were mostly nodules and abscesses, which were localized in the abdomen and buttocks in the majority of cases. The main patient complaint was local pain but some presented with systemic symptoms such as fever and malaise. Biopsies reported granulomatous chronic inflammation in the majority of cases. Skin cultures were positive for NTM and *Mycobacterium chelonae*.

Discussion and conclusions Mesotherapy not performed with quality controlled substances can be a predisposing factor for NTM infection.

Introduction

First introduced in Europe, mesotherapy is a technique which comprises an injection of different substances into the cutaneous mesoderm. It was originally developed to treat localized pains, vascular and lymphatic disorders and several other conditions, but its most current use is for esthetic purposes.^{1,2}

Lately, mesotherapy has been increasingly used in Medellín, Colombia, for body contouring and obesity treatment. Sometimes this technique is performed by a physician, but unfortunately in Colombia (with some exceptions) it is mainly performed by nonphysicians, and more importantly it is carried out in some esthetic centers that do not fulfill the least hygienic requirements to practice this kind of invasive procedure.

To date, the use of mesotherapy has not been well supported in the medical literature and there is poor knowledge about its efficacy, mechanisms of action and long-term consequences for human health.^{1,3}

Benefits gained from mesotherapy or intracutaneous injections for esthetic goals are mainly described in the nonmedical literature, but few reports have focused on its infectious adverse effects. In fact, the scarcity of this kind of report resulted in initial misdiagnoses, such as foreign body granulomas⁴ or staphylococcal infections.⁵

We report and describe the clinical and histopathological features of 15 cases of NTM infection following mesotherapy for esthetic purposes which were identified in only 6 months.

Patients and Methods

We describe 15 patients with NTM infection retrospectively observed at the University Hospital San Vicente de Paul, and in the private practice of some of the authors (Dr SY, Dr PN) in Medellín, Colombia, from November 2004 through April 2005.

Inclusion criteria comprised clinical charts of patients diagnosed as having a cutaneous NTM infection, and a past history of mesotherapy sessions.

Skin lesions were described in each case and the extent of cutaneous involvement was defined according to Bartralot *et al.*,⁶ as 1-localized, when one body area was involved, and 2-disseminated if more than one body area was affected. Associated diseases, sources of infection, and time of evolution until diagnosis were recorded.

Available cutaneous histopathological specimens and acid-fast-bacilli stains were reviewed, and specific patterns for each case were recorded.

Cultures were grown on Ogawa-Kudoh or Löwenstein-Jensen mediums and the results were classified as 1-negative when NTM

growth was not obtained, and 2-NTM when a nontuberculous mycobacterial growth was obtained, but classification was not possible for 3-*M. chelonae* infection, when this kind of mycobacteria was isolated, according to standard classification methods.

Results

All patients were females and the average age was 36 years (range: 19–52 years). The average time between the first mesotherapy injection and the appearance of lesions was 5.4 weeks (range: 1–12 weeks). Although it was not possible to determine the components of the solution injected in some of the patients, the main substances encountered were procaine, soy lecithin, artichoke extract, aminophyllin and organic silicium.

Mesotherapy was performed in different Medellín esthetic centers. The exact source of mycobacterial infection has not yet been identified; however, a current epidemiological work-out suggests procaine from the same provider as the possible source of infection. Interestingly, patient #11 bought the procaine and a vitamin C solution in Colombia but was injected in Guatemala. In addition, this patient was the only one to be injected with vitamin C.

In cases 1, 2, 7, 13 and 14 (Table 1) the technique was carried out by physicians but in the others it was performed by non health providers.

The main patient complaint was local pain and four patients had systemic signs and symptoms such as fever and malaise. Skin lesions ranged from nodules to draining abscesses localized in the abdomen or the buttocks, and in two patients the lesions were observed in other distant body areas where no injection was performed (Fig. 1).

In 11 cases a deep skin biopsy was performed, in addition to tissue fungal, bacterial and mycobacterial cultures (Table 1). Histopathologic findings in all cases were homogeneous (Fig. 2) and are summarized in Table 1.

Mycobacterium chelonae was identified in five out of 15 cases (Fig. 3), a NTM was reported in six cases, and the skin-culture was negative in four cases.

Unfortunately, antibiotic sensitivities for mycobacteria are not currently covered either by the Colombian Obligatory Health Plan (POS) or by our medi-care, and no patient had the budget to pay for them. Therefore, all cases were treated with clarithromycin and surgical drainage. In cases #5 and #12, amikacin and moxifloxacin were added, respectively, owing to a lack of response.

Discussion

Atypical mycobacteria are ubiquitous and have a worldwide distribution.^{7,8} They are usually nonpathogenic for humans but its incidence as a human health issue has become more important in the last few years following mesotherapy injec-



Figure 1 Multiple skin nodules and draining abscesses

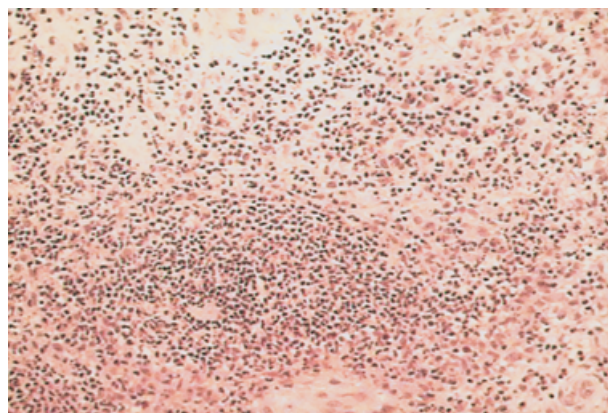


Figure 2 Multiple neutrophils forming an abscess in the deep dermis (hematoxylin and eosin, $\times 20$)

tions for body contouring or owing to subcutaneous injections of medications for noncosmetic purposes.

Medellín is one of the main South American cities in which esthetic and cosmetic procedures are performed. The majority

Table 1 Patients' demographics according to clinical, histological and lab findings

Case	Sex	Age (years)	Substances injected	Incubation period (weeks)	Types of lesions	Localization of lesions	Symptoms	Complications	Histopathology	NTM
1	F	49	Artichoke extract, organic silicium	3	Erythematous-violaceous nodules, some draining seropurulent material	Buttocks, thighs, arms	Local pain	Dissemination	Acute inflammation and microabscesses	<i>M. chelonae</i>
2	F	52	L-Carnitine, aminophyllin, artichoke extract, organic silicium, procaine	8	1 abscess, 1 nodule	Left arm, left thigh	None	None	Not taken	Negative
3	F	35	No data	8	1 nodule, 1 abscess	Buttocks	Local pain	None	Chronic inflammation and microabscesses	Negative
4	F	36	No data	8	1 fluctuant nodule	Right Buttock	Local pain, malaise, fever	None	Granulomatous chronic inflammation and microabscesses	<i>M. chelonae</i>
5	F	33	Soy lecithin	2	Nodules	Abdomen, trunk	Local pain, itching	Scar formation	Not taken	NTM
6	F	34	Aminophyllin, tiratricol (Triac), artichoke extract, organic silicium	4	2 draining nodules	Abdomen	Local pain	Scar formation	Not taken	NTM
7	F	45	No data	6	Nodules, abscesses	Abdomen, arms, legs, face, scalp	Local pain, itching, malaise, fever	Scar formation	Granulomatous chronic inflammation and microabscesses	NTM
8	F	42	Lecithin	8	Violaceous fluctuating nodules	Abdomen, trunk	Local pain	Scar formation	Granulomatous chronic inflammation and microabscesses, panniculitis	<i>M. chelonae</i>
9	F	26	Lecithin, procaine	4	Nodules, abscesses	Abdomen, back, buttocks, thighs	Local pain, fever	Scar formation, dissemination	Not taken	<i>M. chelonae</i>
10	F	19	No data	1	2 nodules, 1 abscess	Abdomen	Local pain	Scar formation	Granulomatous chronic inflammation	NTM
11	F	30	Vitamin C, procaine	1	Nodules with crusting	Buttocks	Local pain	Scar formation	Chronic inflammation and microabscesses	NTM
12	F	34	Procaine, aminophyllin, artichoke extract, caffeine	4	Nodules, abscesses	Buttocks, thighs	Local pain	None	Granulomatous chronic inflammation and microabscesses	<i>M. chelonae</i>
13	F	33	L-Carnitine, aminophyllin, artichoke extract, organic silicium, procaine	8	Nodules, abscesses	Thighs	Local pain, itching	Scar formation	Granulomatous chronic inflammation	Negative
14	F	31	No data	4	Nodules, abscesses	Abdomen, arms, buttocks	Local pain	Scar formation	Granulomatous chronic inflammation and microabscesses	NTM
15	F	42	Lecithin, procaine	12	Nodules	Abdomen, arms, buttocks, thighs	Fever, malaise	Scar formation	Granulomatous chronic inflammation and microabscesses	Negative

NTM, nontuberculous mycobacteria.



Figure 3 Mycobacterial growth in Ogawa culture media

of esthetic procedures here in Colombia are carried out by very well-known certified plastic surgeons, and even with these skilled physicians prices are lower compared with other countries. This “cosmetic market” as well as law laxity has opened a business door to unskilled esthetic physicians and nonphysicians, and currently there are many nonscrupulous people that sell all kinds of cosmetic procedures, medications and plant extracts without the minimal aseptic requirements and quality control. This has resulted in the identification in the city of several cases of skin NTM infection in 6 months only, although according to our health administration department (DSSA) (personal communication: Dr Giraldo, epidemiologist), there have been more than 50 cases reported from several local dermatologists and infectologists which are under investigation and will be included in a future publication.

Most worldwide mycobacterial skin and soft tissue infection outbreaks have involved the rapidly growing species of the *Mycobacterium fortuitum* complex, which is mainly composed of *M. fortuitum*, *M. abscessus* and *M. chelonae*.^{7,9}

In New York city in 2002, 25 cases were reported and 13 of them were confirmed as having a *Mycobacterium abscessus*

infection related to mesotherapy and rejuvenation treatments.^{10,11} In the same year there was an outbreak in Santiago, Chile, with 40 cases related to *Mycobacterium abscessus*.¹²

There have also been two cases reported in Brazil with *Mycobacterium fortuitum* infection after mesotherapy.¹³

In Colombia in 1993 there was a huge outbreak of *Mycobacterium abscessus* after “neural therapy” was given by a bioenergetic practitioner.^{5,14,15} Estrada *et al.* have reported several cases of mycobacterial infection from different sources such as sputum, gastric fluid, urine and skin,¹⁶ but none of the skin infections described resulted from mesotherapy. Therefore, to our knowledge, this is the first Colombian report of 15 cases of skin NTM infection following mesotherapy for esthetic purposes.

Interestingly the main mycobacteria identified in our patients was *M. chelonae*, which has not yet been strongly related to cosmetic procedures.

Most of the patients presented clinically with skin nodules and abscesses in the injection site; however, two patients presented with skin lesions distant from the site of injection. In fact, one of these patients was immunosuppressed owing to parenteral corticosteroids received for a misdiagnosis of a systemic allergic reaction to the substances injected.

These lesions can be erroneously diagnosed as pyoderma by nondermatologists who, in the majority of cases, order bacterial cultures that are usually negative.

It is noteworthy that all the patients described here were misdiagnosed as furunculosis by the esthetician. In fact, all these patients received previous antibiotics, including dicloxacillin, doxycycline, ciprofloxacin and cephalexin, without any improvement. This not only has an economic impact but also brings about the risk of antibiotic resistance.

According to Jogi & Tyring, *M. chelonae* and other NTMs frequently exhibit acquired resistance to a single antibiotic such as clarithromycin.¹⁷ Unfortunately we were not able to perform *in vitro* sensitivity tests for our patients, and some patients cannot even afford monotherapy with clarithromycin. Therefore the lack of therapy or incomplete treatments will certainly complicate the approach of these patients in Colombia and surrounding countries.

The picture is even more complicated in terms of aseptic measures because these organisms seem to be very resistant to detergents and disinfectants,¹⁸ which contributes to outbreak occurrences in health care services and other centers where mesotherapy and other invasive procedures are performed.

In conclusion, we present a preliminary report of 15 cases of NTM infection identified in a short-term period following mesotherapy, which were identified and appropriately biopsied and cultured by dermatologists. Skin and histopathological features must lead to a high index of suspicion of mycobacterial infection, partly because it is not unusual for women in Colombia (and perhaps in other countries) to deny the performance of any cosmetic procedure to their husbands and/or

physicians. In addition, mesotherapy performed without quality controlled substances could be a predisposing factor for NTM infection.

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