Letter to the Editor

Actinomyces-like organisms on intrauterine devices from asymptomatic users.

Short title: ***Actinomyces* on intrauterine devices**

Dear Editors,

Intrauterine devices (IUDs) are the most widely used contraceptive methods; their efficacy is mainly based in the foreign body response and the ability to induce cellular and biochemical changes in endometrium and uterine fluid. IUDs are known to be associated with a risk of pelvic infection, heavier periods, menstrual cramps and complication associated with colonization of microbes on these implant devices. [1] The most common infection related to insertion or manipulation of an intrauterine device is pelvic inflammatory disease, and the microorganisms most frequently involved are *Chlamydia trachomatis, Neisseria gonorrhoeae* or *Escherichia coli*, among others. Species that most often complicates the IUD also include *Actinomyces*-like, with a prevalence of 1.1 compared with 0.2% of non-IUDs users. [2] In some cases, even in asymptomatic patients, IUDs behaves as a risk factor for invasive actinomycosis. [3]

The purpose of the study is to determine the frequency of microorganisms, especially of the *actinomyces*-like, in asymptomatic patients with chronic use of intrauterine devices.

Study design.

21 The study included 96 IUDs obtained from patients who attended the Gynecology
22 department of the General Hospital of Mexico. The patients did not report clinical data of
23 pelvic inflammatory disease or actinomycosis, and did not report previous treatment with
24 antibiotics.

25 The devices were placed immediately in 10 ml of isotonic saline solution and were stirred
26 with Vortex equipment for a period of 1 to 3 minutes, causing the separation of the
27 microorganisms present in the devices. Subsequently, Gram and Ziehl-Neelsen stains were
28 made. 100 µl of the suspension was cultured in blood-agar and another similar amount in
29 thioglycolate medium for subsequent identification and for determining the characteristics
30 of the microorganisms. The cultures were carried out in anaerobic using gas-pack
31 envelopes at 37°C, observing the development of the culture at 7 and 15 days.
32 Subsequently, Gram and Ziehl-Neelsen stains were made. [4]

33 To identify those microorganisms belonging to the genus *Actinomyces*, biochemical tests
34 were performed, such as nitrate reduction, glucose, maltose, sucrose, raffinose, xylose,
35 lactose, mannitol and trehalose. Microorganisms other than the genus *Actinomyces* were
36 identified in VITEK ® 2 equipment. [4,5]

37 Results. Of 96 IUDs obtained, 84 (87.5%) were high copper type (TCu380), 4 (4.2%)
38 LNG-20 (levonorgestrel), 4 (4.2%) Lippes Loop, 2 (2.1%) 220 TCu and 2 (2.1%)
39 Gravigard. Fifty six devices (58.4%) had a time of more than 5 years of use (range: 1
40 month - 32 years, average 7.5 years). Samples obtained were cultures in blood agar media
41 showed positive *Actinomyces* sp (1.04%) in one patient, quantification cut-off was 200
42 colony-forming units of *Actinomyces israelii*. The type of IUD was TCu380 (Copper IUD)
43 with 11 years of use. The total number of isolated microorganisms and type of IUD are

presented in Table 1. Due to the number of samples and the microbiological findings, we were not able to determine if IUDs and the time of use are risk factors for the development of asymptomatic infections.

Discussion and conclusions. The results obtained show the isolating of actinomycetes is low and coincides relatively with few studies in the literature, [1-3,5,6] since the prevalence of *Actinomyces*-like in the devices studied was only 1.04% and allow us to assume the use time of the device is not a factor that increases its prevalence. Use of IUDs contribute to the increase in incidence of pelvic inflammatory disease, [7] and thus, more detailed studies are needed with the aim to settle whether the presence of IUDs is a risk factor for actinomycosis on asymptomatic IUD users. Biofilm formation or grain that can produce *Actinomyces* sp, which is favored by IUD use, induces growth on culture media. [3] However, we noted the absence of growth; this is partly due to the encapsulated structure of the organism. We consider the development of actinomycosis is part of a complex phenomenon, in which several factors could be involved (E.g. vaginal microbiota and pH, previous antibiotic treatments, and duration of IUD (risk of infection is higher in women wearing IUDs for more than seven years). [2,5,7]

Physicians should warn women using IUDs on the possibility of intrauterine infection and with a positive cervicovaginal swab specimen with *Actinomyces*-like organisms can remove the device (although this behavior is controversial), with the possibility of reinserting when the findings of exudates are negative for these organisms.

References.

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Table 1. Microorganisms isolated from IUDs

IUD type	Isolated microorganism n (%)
TCu 380	-*Actinomyces israelii* 1 (1.04). -*Candida albicans* 4 (4.16). -Normal vaginal microbiota *(Staphylococous aureus,*

	Escherichia coli, Serratia marcescens, Streptococcus anginosus) 84 (84.96)
TCu 220	- Normal vaginal microbiota *(Staphylococcus aureus, Escherichia coli)* 2 (2.08).
Lippes loop	None
LNg-20 (levonorgestrel)	None
Gravigard	None

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