

Actinomyces in the female genital tract

A preliminary report

G C GRICE* AND S HAFIZ†

From the *Department of Genitourinary Medicine, Royal Hallamshire Hospital, and the †Department of Medical Microbiology, Medical School, Sheffield

SUMMARY *Actinomyces* spp were isolated by culture of endocervical specimens from two groups of women attending the department of genitourinary medicine of the Royal Hallamshire Hospital, Sheffield. The first group consisted of 78 users of intrauterine contraceptive devices (IUCD) of whom 20 (25.6%) were culture positive. The second group contained 63 women using various forms of contraception 12 (19%) of whom were culture positive. None of these 12 women had an IUCD or foreign body in situ. The results suggest that *Actinomyces* spp may be part of the commensal flora of the genital tract in some women.

Introduction

Actinomyces is a normal commensal of dental caries, the tonsillar crypts, and the colon but does not seem to invade intact mucus membranes unless there is pre-existing erosion or perforation of the tissue. Actinomycosis classically affects three areas of the body—the face and neck, thorax, and abdomen. It is a chronic disease characterised by superficial or visceral granulomatous lesions which form abscesses which break down and produce multiple draining sinuses. Characteristic “sulphur granules” may be found in the exudate, the sinus walls, or the deep lesions.

There has been an increasing number of reports of actinomyces infecting the female genital tract, particularly in women using an intrauterine contraceptive device (IUCD).¹⁻³ Several species have been identified, the most common being *Actinomyces israelii*, but *A naeslundii*, *A eriksonii*, and *A pro-prionica* may also be responsible. Most studies have relied on cervical cytology or tissue histology for diagnosis because isolation of actinomyces by culture was considered less reliable, success rates of up to 36% having been reported.^{4,5} An isolation rate of 86% was obtained more recently using a culture medium which incorporated metronidazole.⁶

Since October 1981 we have isolated actinomyces by culture from women using either IUCDs or alternative contraceptive methods.

Address for reprints: Dr G C Grice, Department of Genitourinary Medicine, Royal Hallamshire Hospital, Glossop Road, Sheffield S10 2JF

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Patients and methods

STUDY POPULATION

The study initially comprised an unselected group of 78 women attending the department of genitourinary medicine who used an IUCD. A further 63 women who were part of a separate investigation were added to this study for comparison as they used various contraceptive methods.

CULTURE METHODS

A further endocervical swab was taken from each patient on completion of the normal screening investigations for sexually transmitted infection. The swabs from the 78 women using IUCDs were immediately plated on to two Petri dishes stored at room temperature; one contained brain heart infusion agar (BHIA) and the other BHIA with 0.4% sodium bicarbonate. (This modified medium is currently under investigation.) Finally the swab was placed in thioglycollate broth. These specimens were transported to the laboratory where culture was performed for a full 10 days as recommended by the Centers for Disease Control, Atlanta, Georgia, United States.⁷ The figure summarises the technique together with the methods used for species identification. The swabs from the 63 women using various contraceptive methods were placed in Amies' transport medium and subcultured on BHIA in the laboratory.

IDENTIFICATION METHODS

Identification of *Actinomyces* spp was based on the appearance of Gram stained smears and biochemical

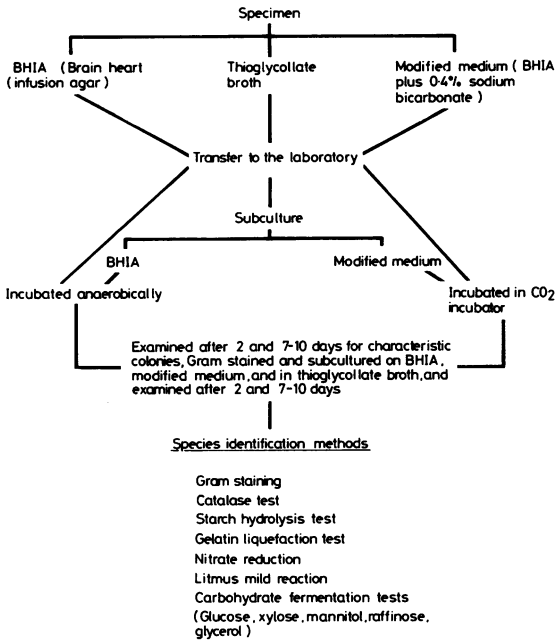


FIGURE Summary of the methods used for culture of actinomyces and species identification.

tests. None of the *Actinomyces* species break down peroxide to produce catalase, liquefy gelatin, or produce much acid in the litmus milk test. *A israelii* and *A naeslundii* respond with only limited starch hydrolysis but do give a positive nitrate reduction test, whereas *A bovis* fails to reduce nitrate but gives a pronounced response to starch. Production of acid in the sugar fermentation tests is a useful means of identifying species. All ferment glucose, but only *A israelii* ferments xylose and mannitol and *A bovis* only occasionally utilises glycerol. *A naeslundii* ferments raffinose well, whereas *A israelii* gives variable results.

Results

Actinomyces was cultured from 20 (25.6%) of the 78 women with an IUCD in situ. The type of IUCD was unknown in seven of them; 12 used a copper device and one a Saf-T-Coil. The duration of use ranged from six months to six years. None of these women had pelvic inflammatory disease (PID). Their symptoms were vaginal discharge (seven), vulval irritation (three), dysuria (one), and pleuritic pain (one); seven women were asymptomatic and one had vulval warts. Other causes for the symptoms were found in all but five of these women, who were not treated but advised to have their IUCD removed.

Of the 63 patients using various contraceptive methods 12 (19.1%) were infected with actinomyces (table). Five of the women had an IUCD in situ and all were culture negative. Actinomyces was isolated in 12 (20.7%) of the 58 non-IUCD users. Only one of the 12 infected women had PID; she was currently using no contraception although an IUCD had been removed six months earlier during a similar episode of pelvic pain. The symptoms of the remaining 11 infected patients not using an IUCD were: vaginal discharge (five), vulval irritation (three), dysuria and loin pain (one) (three having more than one symptom); four were asymptomatic and one had vulval warts. Other causative pathogens were found in all but three of the symptomatic women and they were treated accordingly. The three women with no other pathogen were not treated. The species of actinomyces identified included 29 isolates of *A israelii*, one each of *A bovis* and *A naeslundii*, and one unidentified species.

TABLE Results of actinomyces culture related to contraceptive methods in 63 unselected women

Method of contraception	No of women	No (%) culture positive
Intrauterine contraceptive device (IUCD)	5	0
Oral contraceptive	23	4 (17.4)
Sheath	3	3 (100)
Cap	1	1 (100)
Sterilisation	1	0 (0)
No contraception	28	4 (14.3)
Total	63	12 (19.1)

Discussion

Actinomycosis has been well described and classically affects three areas (cervicofacial, abdominal, and thoracic) of the body. An increasing number of infections of the female genital system have been reported, usually in women using an IUCD as a form of contraception or where some other foreign body (tampon or pessary) has been present.² Oro-genital contact has been suggested as a possible source of infection.² No type of IUCD has been found to protect against infection, and serious complications associated with IUCD use include dissemination of actinomyces, hepatic abscess, intracranial abscess,² and even death.⁸ Our finding of 25.6% of IUCD users with cervical actinomyces is consistent with that of other workers, who reported a figure of 25%, of whom 1.7-25% had PID.^{4,9,10} We were also able to detect actinomyces in the genital tract of 12 (20.7%) of 58 women using alternative contraceptive methods with no foreign body in situ. This is also consistent

with a recent report of actinomyces isolation from 27% of 30 women without an IUCD or foreign body.¹¹ The finding of actinomyces in such women suggests a commensal role in the genital tract.

Contrary to previous reports, we found that culture was a reliable method of isolating *Actinomyces* spp. Histological examination and cervical cytology have not yet been compared as screening methods for diagnosis. The former is impractical in clinics, and the specificity of the latter is uncertain in view of possible confusion of actinomyces with morphologically similar vaginal flora.¹¹ Until sera for immunofluorescence tests become freely available the sensitivity of cervical cytology for screening purposes remains unknown.

Despite the small numbers so far investigated this preliminary study indicates that the presence of actinomyces in the genital system of women is not uncommon and may be found in the absence of an IUCD or foreign body. It has also shown that culture techniques may prove more successful than previously thought. Controlled studies of large numbers of women practising various methods of contraception are in progress to determine the precise role of actinomyces as a commensal in the female genitourinary tract and its relationship to contraception and sexual practice and to establish a culture technique which is reliable, fast, and economical.

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