

Table 1
Microorganisms detected in 92 males aged 15 to 59 with sterile pyuria.

Microorganisms detected ^c	Number	Percentage ^a	Percentage ^b
<i>Chlamydia trachomatis</i>	23	25.0	57.5
<i>Ureaplasma urealyticum</i>	12	13.0	30
<i>Neisseria gonorrhoeae</i>	5	5.4	12.5
<i>Mycoplasma genitalium</i>	4	4.4	10
<i>Haemophilus influenzae</i>	2	2.2	5
Herpes simplex type 1	2	2.2	5
Adenovirus	1	1.1	2.5
<i>Trichomonas vaginalis</i>	1	1.1	2.5
Total	50	—	—

^a Percentage of the 92 cases studied.

^b Percentage of the 40 patients with genitourinary infection.

^c Nine infections were mixed: *C. trachomatis* and *U. urealyticum* (n=3), *C. trachomatis* and *M. genitalium* (n=2), *M. genitalium* and *U. urealyticum* (n=1), *T. vaginalis* and *U. urealyticum* (n=1), *N. gonorrhoeae* and herpes simplex type 1 (n=1), *C. trachomatis*, *U. urealyticum* and *M. genitalium* (n=1).

carried out for herpes simplex (LightMix[®], Roche, Berlin, Germany) and adenovirus (in-house PCR).

We studied the urine of 92 patients with 15 to 6123 leukocytes/ μ l (median: 76). Previously undiagnosed infections were detected in 40 patients (43%) aged from 17 to 59 (median: 32), with a total of 50 genitourinary infection-causing microorganisms, chief amongst which was *Chlamydia trachomatis* (n=23), representing 57.5% of positive cases (Table 1). No urethral exudate samples were collected from any of the patients in A&E. The results were reported to the patients and/or the doctors they had been referred to. Of the 40 patients, 38 were contacted and 28 (70%) attended the microbiology clinic (it was not possible to inform two patients, both with *Ureaplasma urealyticum* infection). New urine samples (first-void urine) were obtained from 27 patients and 22 (79%) had leucocyturia. A urethral swab was obtained from 25 patients, with leukocytes being found in 15 (60%).

Epididymo-orchitis was diagnosed in 22/40 patients (55%). Testicular involvement was detected in 15 of 23 patients infected by *C. trachomatis* and one of the five with gonorrhoea. In two patients (aged 42 and 44), *Haemophilus influenzae* was isolated after spreading their urine samples on chocolate agar (both had been appropriately treated with ciprofloxacin). In the remaining 18/40 patients (45%) the final diagnosis was urethritis (*Chlamydia trachomatis* was involved in eight and gonococcal infection in four). Three of the cases of urethritis were associated with additional clinical conditions: balanopreputial lesions due to herpes simplex type 1; conjunctivitis due to adenovirus; and simultaneous oral and genital primary herpes simplex type 1 infection. A pharyngeal swab was taken from 20 patients, with four (20%) positives (*Neisseria gonorrhoeae* [n=2], *U. urealyticum* [n=1] and adenovirus [n=1]). An anal swab was taken from two patients, with *N. gonorrhoeae* detected in one, and a conjunctival swab was taken from one patient, detecting adenovirus.

As a result of the expanded analysis, changes to treatment were made in 35 patients (88%): 30 patients had an antibiotic replaced, added or withdrawn due to inadequate empirical treatment, and another five not previously treated were prescribed an antibiotic. Ciprofloxacin was the antibiotic most inappropriately prescribed (22 occasions).

In conclusion, the urine collected for urine culture from males aged 15–59 with sterile pyuria treated in Accident and Emergency was very useful for the diagnosis of other previously unsuspected infections, with a yield of 43%. *C. trachomatis* was the most common pathogen (25% of the urine samples studied and 57.5% of those positive). The definitive diagnosis required changes in the treatment of most of the patients with positive results (88%). It is important to remember how uncommon cystitis in young men is without underlying disease and to suspect an STI for the choice of treatment, even if no urethral discharge is observed and prior unprotected sexual relations cannot be confirmed. The microbiological diagnosis provides confirmation of the pathogen and allows changes to be made to the empirical treatment, if necessary, and subsequent and necessary study of sexual contacts. The application of protocols for the empirical treatment of epididymo-orchitis in young patients, covering *C. trachomatis* and gonococcus³, improves therapeutic success.

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Usefulness of point-of-care ultrasonography in the diagnosis and follow-up of acute sinusitis[☆]



Utilidad de la ecografía clínica en el diagnóstico y seguimiento de la sinusitis aguda

Over a number of years now, the introduction of point-of-care ultrasound has become widespread in different medical and surgical specialities. This term refers to an ultrasound performed and interpreted by the doctor responsible for the patient.¹ It is easy

to apply with short learning curves, and allows immediate, concrete clinical information to be obtained.² There is a wide range of recognised applications in the Accident and Emergency Department which offer great benefits in advanced capability for both diagnosis and monitoring of response to therapy.³

We present here the case of a 32-year-old female patient, 13 weeks pregnant, with no relevant previous medical history is presented. She described a one-week history of pain in the right maxillary region, nasal congestion, foul-smelling rhinorrhoea and documented pyrexia of up to 37.9 °C which did not improve despite symptomatic treatment with paracetamol 650 mg/8 h.

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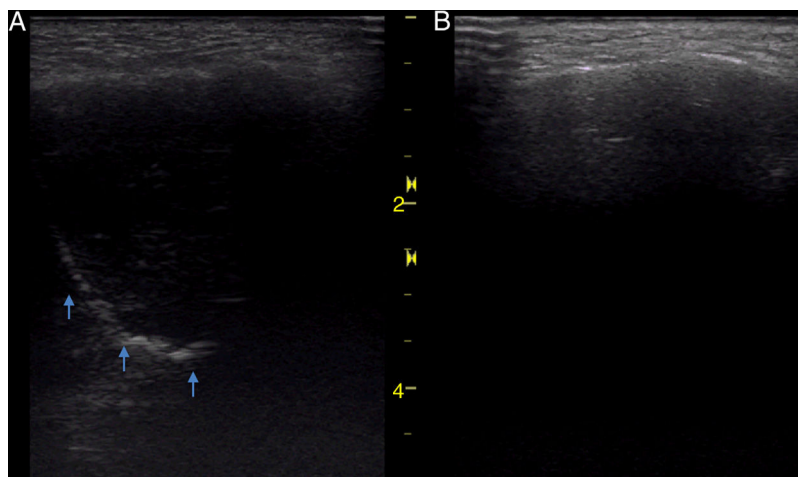


Fig. 1. Right maxillary sinus, longitudinal section with linear probe in the area of greatest sensitivity. (A) A “sinusogram” sign (arrows) can be seen delimiting the posterior wall of the maxillary sinus, which has echogenic content inside. (B) Two weeks later, in the same location, disappearance of the sinusogram.

On physical examination, she was found to have pain on palpation of the right maxillary region which increased with postural changes. There were no significant abnormalities in the rest of the examination.

With the physical examination findings and the symptoms reported by the patient, the initial suspicion was acute sinusitis. As the patient did not wish to start antibiotic treatment without diagnostic confirmation and as she was pregnant and did not wish to have a maxillary sinus X-ray, she was offered the possibility of a point-of-care ultrasound.

The ultrasound in the area of the right maxillary sinus (Fig. 1A) revealed the presence of a “sinusogram”, confirming the suspicion of acute sinusitis. The patient was prescribed antibiotic treatment with amoxicillin 750 mg/8 h for 10 days. From day two of treatment, she reported significant clinical improvement.

After completing the treatment, a repeat ultrasound scan was performed in the same position as the first (Fig. 1B) and showed the disappearance of the sinusogram.

Acute sinusitis consists of infection of the paranasal sinuses, either of viral or bacterial origin. The pathophysiological mechanism involves three fundamental factors: obstruction of the sinus opening, reduced mucociliary clearance and an increase in the viscosity of the secretions. It is most common for the infection to be located in the maxillary sinus and aetiology is predominantly viral, but in 0.5–2% of the cases, it can be complicated by a bacterial superinfection.^{4,5}

Diagnosis is essentially clinical and should be supported by physical examination, consisting of palpation of the sinus areas. However, it does require a high degree of clinical suspicion. Imaging tests are not usually required for diagnosis, with their use reserved for searching for complications.^{4,5}

When a patient presents with a clinical respiratory infection lasting seven days and two or more of the following: purulent nasal exudate, poor response to decongestants, facial pain or pain in sinus areas which is aggravated by postural changes or the Valsalva manoeuvre, headache and fever, we should suspect acute sinusitis.

The main aim of treatment is to drain the contents of the sinuses by measures such as humidifying the environment, nasal corticosteroids or heat over the sinus and symptomatic treatment. The use of antibiotics should be reserved for patients who do not improve after seven days of symptomatic treatment or when they have serious symptoms or complications.

The sinus X-ray (mainly the specific Waters projection for the maxillary sinus) would show a thickening of the mucosa, with opacification of the sinus or air-fluid levels, but it has a low sensi-

tivity and specificity.^{4,5} Although it is more sensitive than physical examination, the use of plain X-ray in the diagnosis of acute sinusitis is not cost-effective in the initial management.

Ultrasound of the paranasal sinuses is a quick, simple and non-invasive examination. The procedure is painless, can be repeated without limits, is easy to interpret and does not emit radiation. This technique has shown a high sensitivity (>86%) and specificity (>96%) much higher than X-ray for determining the presence of exudate from the maxillary sinuses. Among its limitations is that it is not possible to examine the ethmoid and sphenoid sinuses.

We consider ultrasound to be an aid in the diagnosis and follow-up of acute sinusitis, as well as a guide in the differential diagnosis of other common disorders, such as headache, rhinitis or conditions of odontogenic origin.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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