

Cefadroxil treatment of infections of the ears, nose and throat

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The efficacy and tolerance of the new oral cephalosporin cefadroxil was tested in 65 patients (39 men and 26 women) treated for a large variety of moderate to severe infections of the ears, nose and throat which were not expected to undergo a spontaneous remission. The most frequently isolated pathogens were streptococci and *Staphylococcus aureus*. Patients received doses of 1 g every 12 h and the treatment lasted between 2 and 24 days with an average of 8.8 days. In 35 patients, some of whom had already been treated unsuccessfully with another antibiotic, the results were very good; they were good in 24; and not evaluable or unsatisfactory in 6 patients with resistant bacteria, such as *Pseudomonas*, or who needed surgical intervention. A high degree of effectiveness and a rapid response to treatment with cefadroxil were impressive. No relapses were recorded. Clinical examination of the 65 patients revealed one case of allergic skin reaction in a patient who was allergic to guinea pig's and lamb's hair. Four patients complained of transient nausea, two of diarrhoea, and one each of anorexia or vertigo after having taken the drug on an empty stomach. Seven patients who had a clinical history of gastrointestinal diseases did not report any adverse symptoms. Cefadroxil thus proved to be an effective and well-tolerated antibiotic.

Wirksamkeit und Verträglichkeit des Oralcephalosporins Cefadroxil wurden bei 65 erwachsenen Patienten (39 Männern, 26 Frauen) untersucht. Es handelte sich um mittelschwere bis schwere Infektionen des HNO-Fachbereichs. Die häufigsten pathogenen Isolate waren Streptokokken und *Staphylococcus aureus*. Die Patienten erhielten alle 12 Stunden 1 g Cefadroxil, und die Behandlung dauerte zwischen 4 und 21 Tagen, durchschnittlich 8,8 Tage. Das mittlere Körpergewicht der Männer lag bei 78 kg, das der Frauen bei 61 kg. Bei 35 Patienten, von denen einige bereits erfolglos mit einem anderen Antibiotikum behandelt worden waren, zeigten sich sehr gute therapeutische Ergebnisse; gute Resultate wurden in 24, unbefriedigende oder nicht zu beurteilende Ergebnisse in 6 Fällen erzielt. Die starke Wirksamkeit und das häufig beobachtete sehr rasche Ansprechen auf die Cefadroxil-Therapie waren beeindruckend. Es wurden keine Rückfälle beobachtet. Bei der klinischen Beobachtung der 65 Patienten wurde ein Fall von Allergie festgestellt. Vier Patienten klagten über Nausea (4), Diarrhoe (2), Anorexia (1) oder Vertigo (1), nachdem sie das Präparat auf nüchternen Magen genommen hatten. Sieben Patienten, bei denen gastrointestinale Störungen aus der Anamnese her bekannt waren, zeigten jedoch keine Anzeichen von Nebenwirkungen. Insgesamt erwies sich Cefadroxil als wirksames und gut verträgliches Antibiotikum. Seine Indikationen bei der Behandlung von HNO-Infektionen werden diskutiert.

Introduction

The purpose of this study was to determine the efficacy and tolerance of cefadroxil in ear, nose and throat infections.

Table I. Cefadroxil—Treatment

	Male	Female
Patients ...	39	26
Age (years)	36 (16-67)	30 (15-57)
Weight (kg)	88 (55-93)	61 (45-87)
Dosage	2 × 1 g daily	
Duration	8.8 days (2-24)	

Table II. Diagnoses of 65 patients*

	Number
External otitis	4
Ear furuncle	1
Ear abscess	1
Infected ear fistula	1
Acute otitis media or exacerbated chronic otitis media	10
Acute rhinosinusitis	22
With empyema of the maxillary sinus	2
With empyema of the frontal sinus	1
With cheek oedema	1
With orbital oedema	1
Erysipelis of the face	1
Acute tonsillitis	8
Acute peritonsillitis	1
Pharyngitis	3
Laryngitis	4
Bronchitis	4
Lobar pneumonia	1
Purulent sialadenitis	4
Acute lymphadenitis	6
Infected lateral cyst of the neck	1
	77

* Twelve patients had infections at two separate sites.

Material and methods

The patients were 65 adult patients (39 men and 26 women) treated for a large variety of bacterial infections of the ears, nose and throat (Tables I and II). Their ages varied from 16 to 67 years with an average of 32 years. The severity of the bacterial infections varied from moderate to severe and no spontaneous recovery was to be expected. Of the 65 patients, 9 suffered from an underlying disease, such as diabetes, liver disease, allergy, etc. Seventeen patients had previously been treated unsuccessfully with one or more other antibiotics, mainly tetracyclines or penicillins.

Swabs for bacterial culture were taken from the throat, ear, nose and sinuses whenever feasible. Streptococci and staphylococci were the most common causative micro-organisms. It was assumed that they were sensitive to cefadroxil where *in-vitro* tests could not be obtained.

Table III. Clinical efficacy

	No. of patients
Excellent	35 (53.9%)
Good	24 (36.9%)
Unsatisfactory	3 (4.6%)
Not evaluable	3 (4.6%)
Total	65

Fifty-nine patients (91%) received 1 g cefadroxil tablets bid; in 2 cases 1 g tablets tid and in 4 cases 500 mg bid were given. The patients received the drug until 3-5 days after the regression of all the signs of the infection. Streptococcal tonsillitis and pharyngitis were treated for at least 10 days. The duration of therapy was between 2 and 24 days with an average of 8.8 days. The weight of the patients ranged between 51 and 93 kg with an average of 72 kg. In 41 patients adjuvant treatment consisted of various topical or general non-antimicrobial applications for symptomatic relief.

The detection of side-effects was based on clinical observation as well as on blood tests performed before, during and after treatment, whenever feasible.

Results

In 91% of the cases the therapeutic results could be assessed as excellent or good (Table III). This group included the patients with severe infections where cefadroxil therapy brought about a rapid cure without surgical intervention. The results considered as good included those patients where local treatment may, in part, have been responsible for the cure. In three cases the results were unsatisfactory and in three further cases not evaluable because the treatment was discontinued after 2 days or surgery was needed.

The high degree of effectiveness and the frequently rapid response to treatment with cefadroxil were impressive. No relapses were recorded. Bacterial tonsillitis responded very well and very quickly to cefadroxil. This is probably not due only to the bacterial spectrum, but also to the excellent pharmacokinetics of cefadroxil. In this respect we should remember the pharmacokinetic results obtained by Adam & Kreutle (1980) in serum and tonsils of patients treated with 1 g cefadroxil and cefalexin, respectively. Cefadroxil concentrations in the tonsils are much higher than those of cefalexin.

Side-effects

In 65 patients there was one case of allergic skin reaction in a patient who was allergic to guinea pigs' and lambs' hair, but none in 5 patients with penicillin allergy (Table IV). Some patients complained of transient nausea (4), diarrhoea (2), anorexia (1) or vertigo (1) after having taken the drug on an empty stomach, but seven patients who had a clinical history of gastro-intestinal diseases did not report any adverse symptoms. One of the four patients with nausea suffered from maxillary sinusitis and complained first of vertigo and nausea on the second day of the treatment with 3 g cefadroxil. The treatment was interrupted, but 7 days later renewed cefadroxil treatment was effective and well tolerated. The untoward reactions in five patients correspond to the percentage of 7.7 found by Santella *et al.* (1978), in 1051 patients.

Table IV. Side effects

	Appearance (day of treatment)	Duration (days)	Degree of severity
Hot flushes	1	1	Medium
Nausea	1	1	Slight
Pruritus on the back of the hands and on the knees	11	2	Slight
Vertigo	2	1	Slight
Diarrhoea	2	5	Medium
Nausea	2	5	Slight
Anorexia	2	5	Slight
Nausea after admini- stration before breakfast	1	3	Slight

Table V. Indications

Ear	External otitis, ear furuncle Acute and chronic otitis media Perichondritis of the auricle
Nose	Furuncle of the nose and lip Rhinitis, sinusitis Septal abscess
Throat	Tonsillitis Peritonsillitis Paratonsillar abscess Pharyngitis Laryngitis Bronchitis Lymphadenitis Sialoadenitis Infection of the floor of the mouth

Cefadroxil indications in oto-rhino-laryngological infections

Clinical experience, the antibacterial spectrum of cefadroxil and its pharmacokinetics are the basis for the use of this antibiotic in the treatment of ear, nose and throat infections. The indications are listed in Table V. Cefadroxil seems to be as good a drug as dicloxacillin for the treatment of otitis externa as well as in cases of severe furunculosis of the ear, nose and upper lip. Like the narrow-spectrum oral penicillins, it is also a very important drug for the treatment of acute otitis media in the adult. Surgical procedures are the first choice treatment in cases of chronic otitis media, but cefadroxil may be considered for the medical treatment of cases due to *Staphylococcus aureus*. Perichondritis of the auricle that is not related to a middle-ear infection may be cured with cefadroxil as it is mostly due to *Staph. aureus*.

Cefadroxil is, like the aminopenicillins, doxycycline and the trimethoprim combinations, one of the first choice drugs for the oral treatment of acute or chronic rhinosinusitis. In addition to flucloxacillin and the trimethoprim combinations, cefadroxil is the first choice oral treatment of septal abscess in addition to surgical treatment.

Cefadroxil may be used as a second-choice treatment in cases of acute tonsillitis (the narrow spectrum penicillins are first choice) and as a first choice oral treatment of peritonsillitis as an alternative to the aminopenicillins. In the treatment of acute laryngitis and, especially, acute epiglottitis and bronchitis cefadroxil is to be considered as a second choice after the aminopenicillins, trimethoprim combinations and tetracyclines. It should be considered with flucloxacillin as a first choice drug for patients who have acute lymphadenitis and sialadenitis as well as for those who suffer from an infection of the floor of the mouth if it does not require parental treatment. The activity of cefadroxil against *Staph. aureus* is the reason why it may be considered for short-duration antibiotic prophylaxis in patients with severe soft tissue injuries or with plastic or other operations in ear, nose and throat diseases.

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