When should you prescribe amoxicillin clavulanate?

One of the focuses of bpac programmes this year has been on the rational use of antibiotics. We have had many letters from our readers about different scenarios of antibiotic use, with a large proportion relating to the use of amoxicillin clavulanate. It appears that there is a lack of clarity surrounding the indications for its use.

Overview

Amoxicillin clavulanate is an important and effective broad spectrum antibiotic that is used widely in general practice. The problem is not that it does not work, but rather the more it is used, the higher the likelihood that bacteria will become resistant to this drug. Most infections can be successfully treated with other types of antibiotics and amoxicillin clavulanate needs to be reserved for specific indications when it is really needed.

The most common first-line indications for amoxicillin clavulanate are for human or animal bites or clenched fist injuries and for diabetic foot infections. Common second-line indications (after treatment failure with a narrow spectrum antibiotic) include mild acute pyelonephritis and acute sinusitis.

While use of amoxicillin clavulanate in New Zealand is reducing, prescribing figures are still high compared to other countries. Amoxicillin clavulanate is familiar, it works well and it potentially saves a patient from having to return to their doctor after treatment failure. However convenience for an individual has to be weighed against preventing bacterial resistance for the entire community. Every time you think about prescribing amoxicillin clavulanate, consider whether an alternative would be better.

Your clinical scenarios answered

Is it appropriate to prescribe amoxicillin clavulanate with roxithromycin for the treatment of community acquired pneumonias?

Management of pneumonia is possible in the community when symptoms are not severe, and when the available care for an individual is satisfactory. The choice of which oral antibiotics to use is generally made on empiric grounds to cover the most likely causative organisms.

Community acquired pneumonia (CAP) is most commonly caused by *Streptococcus pneumoniae*. Even when showing relative resistance in vitro, at standard or high doses, amoxicillin is the most active available oral β-lactam antibiotic against *S. pneumoniae*.

The addition of the β-lactamase inhibitor clavulanic acid (as in amoxicillin clavulanate) adds nothing to the activity of amoxicillin versus *S. pneumoniae* but is associated with increased adverse effects such as diarrhoea.

Neither amoxicillin nor amoxicillin clavulanate cover the atypical organisms, *Mycoplasma pneumoniae*, *Chlamydia pneumoniae* or *Legionella sp*.

Most guidelines therefore suggest using amoxicillin as monotherapy for CAP with the addition of a macrolide or a tetracycline if there is high clinical suspicion of atypical pneumonia or if there is lack of clinical response in 24 – 48 hours:

> Amoxicillin* 1 g three times per day, for seven days
>
> + /-

Erythromycin 500 mg four times per day

or

Roxithromycin 300 mg once per day

or

Doxycycline 200 mg stat then 100 mg once per day

*Monotherapy with erythromycin, roxithromycin or doxycycline is an alternative for patients allergic to penicillin.

Treatment with amoxicillin clavulanate is appropriate for post viral/influenza pneumonia, where *Staphlococcus aureus* is often implicated, and to cover anaerobes in aspiration pneumonia,

H. influenzae and *M. catarrhalis*, although associated with exacerbations of COPD, are uncommon causes of CAP and therefore the extra cover provided by amoxicillin clavulanate is unnecessary.

The treatment guidelines for CAP cover a range of clinical scenarios from treating relatively well people at home to those who are critically ill and require hospitalisation. The recommended regimens for hospitalised patients with poor prognostic indicators differ from those appropriate for community level management.

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In some clinics, pelvic inflammatory disease (PID) is treated empirically with doxycycline and amoxicillin clavulanate. Is this ideal?

The majority of cases of PID are sexually acquired. Approximately two-thirds of cases are associated with chlamydia and/or gonorrhoea. Vaginal flora such as those present with bacterial vaginosis and Mycoplasma genitalium are also associated with PID.[1, 2]

Non-sexually acquired PID is rare but may arise after procedures that breach the protective cervical barrier such as interuterine device insertion, dilation and curettage and surgical termination of pregnancy. In terms of management, guidelines do not differentiate between these groups.

Treatment protocols are designed to reflect the common microbiological aetiologies and patterns of resistance. Amoxicillin clavulanate was traditionally used as part of a treatment regimen for PID, however due to increased resistance, it is no longer recommended. Resistance of *N. gonorrhoea* to penicillin is through two separate mechanisms: β-lactamase resistance, which can be countered by the use of amoxicillin clavulanate, or by altered penicillin binding proteins which results in resistance to amoxicillin clavulanate. Between April and June 2008 over 80% of isolates of *N. gonorrhoea* in New Zealand were found to have this second mechanism of resistance, making them resistant to amoxicillin clavulanate.[1]

A suggested regimen for PID is: [2, 3]

Doxycycline 100 mg twice per day for 14 days

or azithromycin 1 g stat (for chlamydia)

And ceftriaxone 250 mg IM stat (for gonorrhoea)

And metronidazole 400 mg twice per day for 14 days (for vaginal flora)

It is recommended that patients should be followed up at 72 hours and then four to six weeks post treatment.

N.B. In our Antibiotic report/express audit, May 2009, we gave advice that mild to moderate non-sexually acquired PID should be treated with amoxicillin clavulanate and doxycycline. However in practice, all PID is treated the same. Amoxicillin clavulanate is not indicated and the regimen of doxycycline, ceftriaxone and metronidazole should be used.

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What is the appropriate antibiotic(s) to use for perianal cellulitis to prevent abscess formation in adults? In view of the fact that anaerobic organisms are likely to be involved amoxicillin clavulanate is often used.

Perianal cellulitis is most commonly seen in young children and is mainly associated with group A streptococcus. In adults, this type of perianal cellulitis is very unlikely, however there are clinical situations where adults, usually males, present with signs of perianal pre-abscess.

There is a lack of evidence about the best early treatment to prevent the formation of an abscess. Isolates of abscess pus are commonly polymicrobial. Therefore if considering empirical treatment of a pre-abscess a broad spectrum antibiotic should be used. In this case amoxicillin clavulanate 500/125 mg three times per day for five to seven days, is appropriate. This regimen does not cover *N. gonorrhoea,* so depending on the patient's history, rectal swabs for gonorrhoea may be considered.

Once an abscess has formed, even if non-fluctuant, the recommended treatment is incision and drainage. In patients with no confounding risk factors (e.g. immunosuppression), antibiotics are of no benefit. The action of antibiotics is impaired by the abscess environment and their use has no effect on long-term prognosis such as fistulae.[1]

Reference:

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ACKNOWLEDGEMENT Thank you to **Assoc. Prof Mark Thomas**, Infectious Disease Specialist, **Dr Celia Devenish**, Obstetrician and Gynaecologist and **Dr Jill McIlraith**, GP and Sexual Health Clinician for expert guidance in developing this document.

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