

Management of infection in primary care – a case-based approach

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Educational aims

- To understand the importance of appropriate antimicrobial treatment using a case-based approach
- To highlight current best evidence-based practice for common infections likely to present at a community pharmacy
- To ensure that patients presenting to the pharmacy with signs and symptoms of an infection receive optimal pharmaceutical care

Key words

Antimicrobials, antibiotics, community practice, evidence-based practice

Resistance is a recognised problem that is affecting management of infection worldwide. It is a very complex problem that is potentially caused by numerous factors including use of inappropriate strengths and routes of antimicrobials, needless use of antimicrobials when managing viral infections, inappropriate use of broad-spectrum antimicrobials, use of poor generics and lack of development of newer antimicrobials with novel modes of actions. Antimicrobials are probably the only drug class where misuse can have a community effect.

The community pharmacist is ideally placed to participate in antimicrobial stewardship programmes and has a major role in educating the general public about the hazards associated with misuse of antimicrobials. Patients may seek advice at the community pharmacy in the first instance, and it is an ideal opportunity to highlight to the patient that antimicrobials may not be necessary to manage their condition.

Case 1

A 25 year old female presents to the pharmacy with a two day history of urinary frequency and suprapubic pain. She denies any fever or haematuria. She is otherwise fit and healthy. On further questioning, she indicates that she has been trying to conceive for the past 6 months. She is penicillin allergic. What would you recommend?

Discussion

The fact that the patient is not systemically unwell (as indicated by absence of fever or haematuria) indicates that it is unlikely that she is suffering from an upper urinary tract infection (UTI). The combination of frequency and suprapubic pain indicate cystitis (an inflammation of the bladder).

Before any further recommendations, a pregnancy test is recommended. A positive pregnancy test would necessitate referral to the general practitioner since antibiotics would be recommended for 3-7 days, keeping in mind that some antibiotics are not safe during pregnancy.¹ It is vital that a lower UTI or indeed asymptomatic bacteruria in pregnancy are treated since these increase the risk of developing an upper UTI (such as pyelonephritis) which has adverse outcomes to both the mother and the foetus.¹

The possibility of undiagnosed diabetes mellitus should be considered and the patient should be asked if there are any additional symptoms of thirst or unexplained weight loss.

The patient may be asked to provide a mid-stream sample of urine (MSSU). This may be visually examined – the presence of a cloudy or smelly urine or blood in the urine is an indication that the patient needs referral to the family doctor.² Urine dipstick testing for nitrites and leucocyte esterase may be a screening service provided in the pharmacy. Nitrites are not usually found in urine, but certain bacteria (such as *Proteus*

Practice points

- Evidence shows that most cases of sore throat in otherwise healthy adult individuals are unlikely to require treatment with an antibiotic
- Potential underlying conditions such as diabetes mellitus need to be considered in adult patients presenting with a lower urinary tract infection
- Evidence-based guidelines help decision making when assessing whether a patient is a candidate for antibiotic use
- Local cultures and sensitivities need to be considered when choosing the most appropriate antibiotic for the individual patient

spp) break down urinary nitrates to nitrites; leucocyte esterase is produced by neutrophils that are present in higher numbers due to the infection. A urine dipstick test has a high negative predictive value such that a UTI can confidently be excluded in most patient groups if **both** nitrites and leucocyte esterase are negative. However, positive tests have a low predictive value and need to be confirmed taking into account a clinical history and/or a combination of other tests.^{2,3} It is worth noting that SIGN 88 recommends use of urine dipstick testing in women only if there are no more than 2 signs and symptoms;¹ using these criteria, this patient is a candidate for a urine dipstick test to confirm her UTI. In addition, there are some patient categories where dipstick testing is not reliable such as pregnant women, children under the age of three years and the immunocompromised.²

Symptom relief in this patient may be achieved by recommending paracetamol or ibuprofen. Cranberry juice and alkalinizing agents (such as sodium or potassium citrate) are not recommended; the evidence base for recommending these is limited.^{2,4} If the symptoms do not resolve after 48 hours, she should be advised to seek advice from her family doctor for antibiotics to be prescribed (trimethoprim or nitrofurantoin usually first line but caution if pregnant). She should also be advised to refer to her family doctor immediately if she develops a fever and/or becomes systemically unwell.

Case 2

A 21 year old male presents to the pharmacy to enquire about “strong” antibiotics. He had been complaining of a sore throat and fever, accompanied by myalgia and arthralgia, for the past 5 days. He had visited his family doctor and was diagnosed with tonsillitis for which he was prescribed Penicillin V (phenoxymethylpenicillin). However, his symptoms did not get any better. His friend,

who is a hospital nurse, informed him that Penicillin V is not a “very strong” antibiotic and that he might need something more “broad spectrum.” He is unwilling to visit the family doctor since he does not feel confident with the advice he will be given. What advice would you give him?

Discussion

The patient needs to be reassured that the symptoms described are suggestive of an infection that is viral in origin rather than bacterial. It is estimated that around 50-80% of sore throats are of viral aetiology with another 1-10% caused by the Epstein Barr virus (glandular fever).⁵ If bacterial in origin, the most commonly identified organism is group A beta-haemolytic streptococcus which is estimated to cause 5-36% of cases. Streptococcal infection is most common in the 5-15 year age group.⁵ It is difficult to make a precise diagnosis in primary care and scoring methods, such as the Centor score, may be used to guide the decision as to whether an antibiotic needs to be started.⁵ Throat swabs are not routinely indicated in primary care.⁵ There is no compelling evidence that antibiotics are of any benefit in primary care, and the increase in antibiotic resistance is a further argument that antibiotics should not be used in such a self-limiting disease.⁶

In view of the above and excluding any co-morbidities, the patient needs reassurance that this is a self-limiting disease and antibiotics, are unlikely to provide any relief. Any effect on the duration of symptoms is likely to be marginal. Antibiotics will, however, expose the patient to potential side effects such as diarrhoea, vomiting and rash.⁷ It is expected that symptoms of an acute sore throat will last for around one week.⁷

Meanwhile, the patient should be provided with symptomatic relief by recommending use of ibuprofen 400mg three times daily (provided there is no history of

asthma or allergies to NSAIDs, in which case regular paracetamol may be recommended). There is very limited evidence for use of over-the-counter throat sprays, lozenges, gargles or Echinacea⁵ though some individuals may find sucking lozenges soothing.⁸ He should be advised to keep himself hydrated since he is pyrexial and to avoid foods or hot drinks that can exacerbate the sore throat.

Should the patient’s symptoms worsen and particularly if there is any difficulty with breathing, stridor, drooling, muffled voice, severe pain, dysphagia, being unable to swallow adequate fluids or becoming systemically unwell, he should be advised to seek medical advice.⁸ Penicillin V would be an appropriate first-line treatment since this is active against streptococcal infections. A macrolide is appropriate in a penicillin-sensitive patient. Ampicillin-based antibiotics including co-amoxiclav should be avoided due to the risk of rash in the presence of glandular fever (which mainly affects young adults 15–24 age group).^{5,9}

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