Whooping cough

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Whooping cough is a common respiratory infection caused by the bacterium *Bordetella pertussis*. It should be considered as a possible diagnosis in any adolescent or adult with an acute cough of more than two weeks' duration, even if they have been fully immunised.

Why is it missed?

In the post-vaccination era, whooping cough is under-recognised in primary care as the incidence is incorrectly thought to be low. The classic clinical features of whooping cough, such as an inspiratory “whoop” (listen on bmj.com), may be attenuated in older children and adults who have been immunised. Moreover, many doctors may not be aware that there is a simple diagnostic serological test.

Why does this matter?

A persistent cough without explanation can cause distress and anxiety, and the patient may be subject to inappropriate investigations, treatment, and referral. Secondly, early diagnosis and treatment with erythromycin can prevent the patient transmitting their infection within and outside the household. This may be especially important in young infants, who may have severe complications such as respiratory failure and death. Thirdly, notification of all cases of whooping cough by primary care clinicians and enhanced surveillance of laboratory proved cases would give a better estimate of the efficacy of the vaccine and of the burden of disease in the community.

How is it diagnosed?

Clinical features

Acute cough persisting for more than two weeks, without the characteristic inspiratory whoop, may be the only clinical symptom of whooping cough. Initial symptoms, lasting for up to two weeks, mimic a simple upper respiratory tract infection. This is the most infectious period. Paroxysmal episodes of coughing may continue for up to six weeks but can recur with further respiratory infections. In China whooping cough is referred to as the one hundred day cough. In all age groups, irrespective of immunisation status, the cough lasts an average of three months.

Investigations

*Bordetella pertussis* is a difficult organism to culture without a correctly collected pernasal swab or nasopharyngeal aspirate; neither of these samples is easy to collect in primary care. The sensitivity of culture falls from 15-45% to 0% during the first three weeks of the cough, and sensitivity may be further reduced by antibiotic treatment, previous immunisation, and transport of the specimen. Serology is the recommended diagnostic blood test in primary care and is routinely used in many countries: a single raised titre of antipertussis toxin IgG has a sensitivity of 76% and a specificity of 99% for the diagnosis of whooping cough across all age groups. More recently, assays of antipertussis toxin IgG levels in oral fluid have been validated; they are quick and simple to use in primary care and have recently been made available in the UK.

How is it managed?

Whooping cough should be notified. Treatment may not affect outcome for the patient, but erythromycin within 21 days of onset of symptoms reduces the period of infectivity and may prevent transmission to household members. A seven day course is sufficient. Prophylaxis with erythromycin should be offered to everyone in households with a vulnerable infant who may be unimmunised or partly immunised. In infants the illness may be severe and require prompt referral to secondary care.

I thank Doug Jenkinson for permission to use an audio clip from his website and for his work in promoting the clinical recognition of whooping cough in primary care.
Case scenario
A 17 year old girl presents with a three week history of cough. The cough keeps her awake at night and she has bouts of coughing that disturb her classmates. She is fully immunised. Her general practitioner requests serology for anti-pertussis toxin IgG antibodies, which are found to be raised, indicating a recent infection with *Bordetella pertussis*.

How common is it?
Whooping cough is a statutory notifiable disease in the United Kingdom, but notifications remain low. Yet epidemiological evidence indicates that whooping cough remains an endemic disease in adolescents and adults. International case series of adolescents and adults with cough lasting for two weeks or more have reported that about 20% of individuals have evidence of recent whooping cough. Serological surveys have shown that whooping cough occurs repeatedly throughout adult life, and it has been estimated people have up to three episodes in a lifetime, despite immunisation.

Key points
- Consider a diagnosis of whooping cough in any patient with an acute persistent cough of more than two weeks’ duration
- A single raised IgG titre to pertussis toxin is 99% specific for diagnosis and is the recommended test in primary care
- Oral erythromycin taken within 21 days of the onset of the cough may prevent transmission
- Notification of all cases of whooping cough by primary care clinicians, and enhanced surveillance of laboratory proved cases, would give a better estimate of vaccine efficacy and the burden of disease in the community

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