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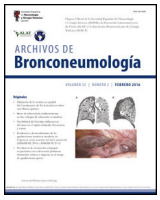

Editorial

[Translated article] Whooping Cough: The Visible Enemy

Tosferina en el adulto: el enemigo visible

Pertussis is not just a disease of children. The incidence and rate of complications is highest in the first few months after birth, but neither natural infection nor vaccination confer protection for life, meaning that reinfection can occur at any time. The incidence of the disease in adults is higher than usually thought. A French study conducted between June 2013 and August 2014 that included patients over 50 years of age who had cough lasting between 7 and 21 days revealed a diagnosis of pertussis in 30 of the 129 study patients.[1] In another study in Germany that included patients over 18 years of age (median age 50 years) with cough of more than 7 days' duration, a diagnosis of pertussis was established in 5.6% of the cases.[2] These infections require the prescription of various drugs, including antibiotics, and visits to the family doctor and the emergency department with the consequent increase in health expenditure.[3] In a recent study in 7 states in the US that included adult patients hospitalized for pertussis, 12% of those aged 21–64 years, and 10% of those over 65 years, were admitted to intensive care.[4]

Pertussis is a highly contagious respiratory disease that has a basic reproduction number estimated at between 12 and 17.[5–7] The typical clinical presentation in adults prompting a possible diagnosis of pertussis usually involves cough lasting more than 2 weeks, associated with any of the following symptoms: paroxysmal cough, inspiratory whooping, and post-tussive vomiting.[6,8] It has a wide spectrum of severity, ranging from mild cough to severe symptoms of pneumonia, encephalopathy, and respiratory failure.[4,5] In adults, the presence of paroxysmal cough and absence of fever have high sensitivity but low specificity for the diagnosis of pertussis, while inspiratory whooping and post-tussive vomiting have high specificity but low sensitivity. Patients may also present other symptoms, such as dyspnea, sleep disturbance, and rib pain, and complications, such as sinusitis, pneumonia, urinary incontinence, or rib fractures.[4] Atypical clinical presentations are becoming more frequent, especially in adults and previously vaccinated subjects, who tend to have milder forms, with cough often being the only symptom. Since cough is a very common, nonspecific symptom with multiple possible etiologies, diagnostic delays can occur that can promote the spread of infection.[8,9] Another important factor is subclinical infection, detected by positive PCR in asymptomatic patients, that also contributes to the spread of infection.[10]

PCR or culture of the patient's biological samples may be performed to confirm diagnosis, but these are only useful within the first 3 weeks after onset of cough, and after this period, serologies should be used.[3,7] Time to medical consultation in adults is around 17 days, which is at the limit of the period during which PCR or culture retain diagnostic utility. This diagnostic delay also increases infectious outbreaks with attack rates that can exceed 90%.[6,11]

The pertussis vaccine, introduced in the middle of the last century, led to a significant reduction in the incidence of the disease. In recent years, however, there appears to be a global resurgence of pertussis. In Italy, the number of cases tripled between 2008 and 2017 after a significant decline in the preceding decade.[12,13] Various explanations have been suggested for this increase in incidence, but there is no clear consensus as to the reason. It could be related to asymptomatic transmission by infected vaccinated subjects, a lower vaccination rate in some populations, a progressive loss of immunity acquired by vaccination or previous infection, genetic variations of *Bordetella pertussis* that make it more virulent or capable of evading the vaccine response, a shorter duration of protection obtained with acellular vaccines, an increase in the awareness of the disease among both the population and medical professionals, or the increased availability and sensitivity of diagnostic methods, among other factors.[1,2,5,7,8]

Against this background, various vaccination strategies are being proposed to optimize pertussis control. The US Centers for Disease Control and Prevention make a number of recommendations for different adult population groups, particularly pregnant women and health workers, and a blanket indication for a pertussis booster in adults, especially in individuals over 65 years of age. The Center for Disease Control and Prevention states that any adult over the age of 19 who has never been vaccinated against pertussis should receive a dose as soon as possible, and they also recommend the use of boosters that include the pertussis component, especially in people over 65 years of age. Pregnant women should receive the acellular pertussis vaccine, preferably between 27 and 36 weeks of gestation. This strategy has already been shown to be

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highly effective and is becoming widespread across multiple Western countries, including Spain.[3,14–16] The recommendations made for adults are also applied to healthcare workers, with priority being given to workers who are in contact with children under 12 months of age.[13] Healthcare workers are particularly exposed to infections in their working environment and may be sources of nosocomial outbreaks, suggesting that vaccination would be particularly efficient in this setting.[5]

Adult vaccination focuses on reducing mortality and transmission to infants. However, although a booster dose at age 65 might solve the problem of tetanus and diphtheria, the best strategy in the case of pertussis would be vaccination every 10 years with DTaP, a vaccine that has already demonstrated a good immunogenicity and safety profile.[17]

Reality, according to Aristotle, is the only truth. Similarly, the available evidence seems to suggest that pertussis is not just a pediatric problem, but also significantly affects the adult population. It seems that prevailing vaccination strategies should be revisited, and that vaccination programs aimed at the entire population should be implemented, focusing particularly on specific groups such as pregnant women or healthcare workers. Recommendations for pertussis vaccination in adults have been drawn up as part of prevention programs for community-acquired pneumonia. These include guidelines developed by the Respiratory Prevention Expert Group that specifically propose the vaccination of adults with chronic disease and a higher risk of pertussis complications due to immunosuppression, COPD or diabetes mellitus.[18] A careful review of symptoms and screening for etiological diagnoses can help identify the disease, improve its prognosis, and limit dissemination. But this simply proves that the enemy is only visible if we seek it, and that the cost-benefit ratio clearly supports the greater use of vaccination against this disease in the adult population.

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Conflict of interests

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