Diseases of close association

Measles, mumps, and rubella

KEY POINT

- **Measles, mumps, and rubella are prevalent to varying degrees throughout the world depending on vaccine coverage. Every year a small number of cases are reported in England and Wales that have been acquired in countries where vaccine coverage is low.**

International perspective

Measles, mumps, and rubella are viral infections that are preventable by vaccination. Measles vaccination is offered by all 192 World Health Organization (WHO) member states as part of the WHO expanded programme on immunisation. There are also effective vaccines available against mumps and rubella, although not all countries offer all of these vaccinations as part of their routine immunisation schedule. High levels of vaccine coverage are required to prevent outbreaks of measles, mumps and rubella.

Measles remains a leading cause of death among young children and is a major cause of morbidity in low income countries. It is a common disease in parts of the world where vaccine coverage is low. More than 20 million people are affected by measles each year and in 2005, the WHO estimated that 345,000 people died from measles, the majority of them children[1]. The highest burden was in the South East Asia region, where an estimated 174,000 people died, followed by the African region where 126,000 died. These figures, although still very high, are a great improvement; the goal to reduce global measles deaths by half between 1999 and 2005 has not only been achieved but exceeded. Measles deaths worldwide plunged by more than 60 % from 873,000 in 1999 to an estimated 345,000 in 2005. Measles deaths in Africa fell by 75%. A new measles goal has now been established and aims to reduce global measles deaths by 90% by 2010 compared to 2000[2].

Mumps occurs worldwide with varying incidence between countries. By the year 2002, approximately 121 countries or regions had included mumps vaccination in their national programmes[3]. However, in some regions, particularly Africa and South East Asia where mumps vaccine is not offered, incidence remains high with epidemic peaks every two to five years, mostly affecting children five to nine years of age.

Rubella occurs worldwide with varying incidence. In 2001, 123 countries/territories reported a total of 836,356 rubella cases; however, few countries undertake rubella surveillance so limited accurate data are available. Epidemics occur every five to nine years. Worldwide, it is estimated that there are 700,000 deaths from congenital rubella syndrome each year[4].

Measles, mumps and rubella in England and Wales

Sources of data

All vaccine-preventable diseases are notifiable in the UK. As a disease becomes rare, however, completeness and accuracy becomes more important so enhanced surveillance systems have been set up for each disease. All notified cases are followed up by an offer of oral fluid IgM testing at the Centre for Infections (CfI) national reference laboratory. Data are collected by the Immunisation Department at CfI from various sources:

- Laboratory data from the reference laboratory and the routine laboratory reporting systems.
- Death registration data.
- Individual case details such as vaccination history, source of infection and severity of disease obtained from hospital records and/or general practitioners.

Although travel history information is collected, the reason for travel and country of birth are not routinely available.

Results

Measles

There were 191 confirmed cases of measles in England and Wales in 2004 and 77 in 2005[5]. During this two-year period, 28 cases were known to have acquired their infection abroad and a further 12 acquired their infection through contact with cases that had travelled. Twenty of the cases linked with travel had been to Asia: Pakistan (10), Thailand (three), India (two), Bangladesh (two), Sri Lanka (one), Philippines (one), and Malaysia (one). A further eight cases had travelled to Jamaica (one), Turkey (one), France (three), Spain (two), and the United States (one). Measles control in some of these countries is good and therefore the infection may not necessarily been acquired in the country of destination but through contact with an infected case while travelling.

The wide variety of measles genotypes were reported during 2004 and 2005 (D3, D4, D5, D7, D9, and B3 strains) indicates that many of the measles cases are likely to have been acquired abroad or have been secondary to cases acquired abroad.

Rubella

In 2004 and 2005, there were 42 confirmed cases of rubella in England and Wales (14 and 28 cases respectively)[5]. These included eight pregnant women, three of whom were infected abroad (Russia, the Philippines, and Mauritius). A further six cases were associated with travel to Russia, Greece, Spain, Romania, Switzerland, and Bangladesh.

Mumps

The UK experienced a large outbreak of mumps in 2004 and 2005. In England and Wales, 8,130 confirmed cases were reported in 2004 rising to over 43,000 in 2005[5]. Most cases occurred in older teenagers and young adults in secondary schools, universities, and military establishments throughout England and Wales, indicating widespread indigenous mumps transmission. When there is indigenous transmission it becomes hard to identify cases acquired abroad as the incubation period for mumps can be up to 25 days, making it difficult to ascertain whether the case was infected before travel abroad.

Conclusion

The prevalence of measles, mumps, and rubella varies throughout the world depending on the vaccine coverage rates. As shown by these data, unvaccinated travellers and migrants from many regions may acquire vaccine preventable infections abroad and secondary spread may occur in the UK if vaccine coverage levels are sub-optimal. All travellers should ensure that they are up to date with the routine immunisations required by the UK schedule and this is particularly important if they are travelling to countries where prevalence is high and/or vaccine coverage is low. More information about measles, mumps, and rubella is available on the Health Protection Agency website[5] or from the National Health Service[6].

References

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Diphtheria

KEY POINT

- Diphtheria acquired abroad is rarely reported in the UK, the last two cases reported in England and Wales were in 2003 and were acquired in Asia.

International perspective

Diphtheria is an acute infectious disease of humans affecting the upper respiratory tract and occasionally the skin, caused by the action of diphtheria toxin produced by the toxigenic bacterium, *Corynebacterium diphtheriae* or *C. ulcerans*. The infection is spread via the respiratory route. It is endemic in the Indian sub-continent, South East Asia, some parts of the Middle East, and South America and during the 1990s, a diphtheria epidemic affected the newly independent states of the former Soviet Union (NIS)[1]. At the peak of the epidemic in 1995, 50,425 cases were reported in the NIS, compared with 24 cases in other countries in the WHO European region (EURO); the NIS accounted for 88% of cases reported worldwide. With the implementation of diphtheria control measures, the total number of cases has declined, but between 1990 and 2001, over 160,000 cases and over 4,000 deaths occurred in EURO[2]. In 2004, 176 cases were reported in EURO; 88% of those were from the NIS.

Worldwide, the estimated number of cases reported in 2005 was 8,229 compared to 9,864 in 2004. The majority (78%) were reported from the South East Asia WHO region (SEARO). SEARO had the lowest estimated vaccine coverage for 2005 at 66%, 1% lower than the WHO African region. It has been estimated that the number of deaths occurring per year (2002 estimate) is 5,000, with 4,000 among children less than five years[3]. Data on diphtheria incidence must be interpreted with caution as surveillance systems and varying case definitions used in different countries may affect the year on year trends.

Diphtheria in England and Wales

Source of data

- Laboratory reports of toxigenic *Corynebacterium diphtheriae* from the Streptococcus and Diphtheria Reference Unit, RSIL, Centre for Infections.

Results

Between 1986 and 2002, there were 56 isolates of toxigenic *Corynebacterium diphtheriae* in England and Wales, of which 41 were acquired abroad (24 in the Indian sub-continent). A further three isolates were identified in 2003, two were cutaneous infections both acquired abroad; one in Cambodia and the other in Bangladesh. A third isolate was a UK laboratory-acquired infection.

In 2004 and 2005, there were no isolates of toxigenic *C. diphtheriae*, although there were three isolates of *C. ulcerans*, all of which were acquired in the UK.

Conclusion

Diphtheria is now very rare in the UK although a small number of cases associated with travel to Asia have been reported. Vaccination against diphtheria is part of routine immunisation programmes in most countries of the world, although coverage may be variable, and may be low in resource-poor countries. All travellers should be reminded to check their routine immunisations are up to date, especially if travelling to a country where vaccine coverage for diphtheria is low or where the disease is still endemic. Further information about diphtheria is available from the Health Protection Agency website[3] or from the National Travel Health Network and Centre[4].

References

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Poliomyelitis

KEY POINT

- Polio has been eradicated in most countries of the world. The last reported case in the UK was in 1993 associated with travel to India.

International perspective

Transmission of poliovirus occurs by the faecal-oral route and the infection can cause meningitis that can lead to paralysis. After Somalia was declared polio free in 2003, only six countries (Nigeria, India, Pakistan, Afghanistan, Niger, and Egypt) remained endemic for wild poliovirus. In 2005, the same six countries were still classed as endemic although Egypt and Niger did not report any indigenous wild type poliovirus in 2005, but Niger had reported cases that were acquired in other countries[1].

In 2005, the World Health Organization (WHO) reported 1,979 cases of wild poliovirus and of these, 943 were reported in endemic countries and 1,036 were reported from non-endemic countries. Six countries previously free of polio reported cases that were acquired abroad: Yemen (478 cases), Indonesia (303 cases), Somalia (185 cases), Angola (ten cases), Nepal (four cases), and Eritrea (one case). These newly infected countries made up 50% of the total cases reported. The majority of cases in these newly infected countries were linked either directly or indirectly with acquisition in Nigeria leading to subsequent local transmission. Nepal and Angola are the exceptions; the cases they reported were acquired in India[2].

Polio in England, Wales, and Northern Ireland

The UK has eliminated polio and there have been no confirmed cases of indigenous wild polio for more than a decade[3]. The last case to be reported was in 1993, which was in a UK resident who acquired and was diagnosed with polio in India, although no poliovirus was isolated. There were no notifications of paralytic polio in the period 1999 to 2005.

The European region, including the UK, was certified polio-free by the World Health Organization in 2002.

Conclusion

Polio vaccine is part of the routine immunisation programmes for all countries worldwide and, until global polio eradication is achieved, all travellers should make sure that their routine immunisations are up to date. More information is available from the National Travel Health Network and Centre[4].

References

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