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Epidemiology of cholera in travellers, and conclusions for vaccination recommendations

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Abstract

All cases of cholera imported to Europe and North America between 1975 and 1981 were reviewed to assess the danger of cholera for visitors to endemic areas. Data were obtained from the health authorities of the respective countries.

From a total of 129 cases notified to the World Health Organisation detailed reports were obtained on 117 patients. Of these, 66 (56%) were immigrants, refugees, from endemic areas, or foreign workers returning from leave in their native countries. Only 51 (44%) were citizens of countries in Europe or North America. The incidence per journey for foreign travellers visiting Africa or Asia was about 1 in 500 000. Stay in hospital was always short, and fewer than 2% of patients died.

In view of the minimal risk and lack of reliability of cholera vaccination, such protection is not indicated for ordinary tourists visiting developing countries.

Introduction

There are vast discrepancies about who should be immunised against cholera. For example, *Manson's Tropical Diseases* still claims that cholera vaccination "is necessary for travellers to West and East Africa, Egypt, the Sudan, the Near and Middle East, Pakistan, India, Burma and South East Asia."[1] In contrast, the US Department of Health and Human Services recommends such immunisation only if an international certificate of vaccination against cholera is required as a condition for entry, or for "special high-risk groups that work and live in highly endemic areas under less than adequate sanitary conditions and those persons with compromised gastric defense mechanisms."[2] The World Health Organisation does not expressly state that any traveller should have this vaccination.[3] To clarify this disparity we have analysed all cases of cholera imported to Europe and North America (Canada and the United States) in the period 1975-81.

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Methods

The health authorities of all industrialised countries in Europe and North America who notified the WHO of imported cases of cholera were asked in each case to fill in a questionnaire covering both personal data (age, sex, nationality, country of residence, destination, purpose and duration of the journey, and previous vaccination) and specific information about the cholera (presumed place of infection, clinical course). Only those cases that were confirmed microbiologically and were imported after infection abroad are included here. Only the health authorities of Spain and Yugoslavia failed to reply.

Results

Between 1975 and 1981, 129 cases imported to European countries or to North America were detected. Of the 117 patients on whom complete data were available 51 (44%) were citizens of industrial nations. Of these, 34 went to the endemic area for a holiday, six for a visit, and seven for professional reasons; in the remaining four the purpose of the journey was unknown. Thirty per cent of this partial population stayed in the endemic region for less than a week, and 88% for up to one month. Foreign workers living in industrial countries who returned after a home leave in their native countries accounted for 44 patients (38%), while 22 persons (19%) were immigrants, refugees, or tourists from endemic areas.

The table shows the origin and destination of each subject with cholera. Almost half of the patients (59 of those reported to the WHO) imported the infection from Morocco, Tunisia, or Algeria. Of the 23 affected persons in Tunisia, 20 were visitors from industrial countries. In Morocco, Algeria, and Turkey two-thirds or more of the exported cases were autochthonous. From the other countries too few cases were exported to judge the ratio between foreign and autochthonous patients.

Within the European and North American cases, just over half of the patients were aged over 50. This contrasted with the affected citizens of endemic countries, of whom 34% were aged 0-5 years and 10% 6-10 years. Only 35% were aged 11-50 years, and 16% were older. In both partial populations slightly more men than women were affected.

Only 70% of the patients originating from industrial countries were admitted to hospital compared with 95% of those from endemic areas. Admission was usually for less than one week and never for more than three weeks. Two patients died—a 69-year-old Dutch tourist three days after her return from Morocco, and a passenger in a German liner on arrival in Marseille after infection in Tunis. So far as we know only two returning tourists caused a secondary infection, occurring in a total of three contacts in the Netherlands[4] and in Switzerland.

Cases of cholera imported to Europe and North America 1975-81

From	To: Europe: Citizens of industrialised nations	To: Europe: Citizens of endemic nations	To: USA/Canada: Citizens of industrialised nations	To: USA/Canada: Citizens of endemic nations	Total imported cases	Cases of cholera reported to WHO 1975–81
Algeria	2	16			18	1 985
Morocco	3	15			18	2
Nigeria	1				1	1 097
Tanzania	1				1	18 447
Tunisia	20	3			23	0
Total from Africa	27	34			61	
India	4	4	1	1	10	78 080
Indonesia		5	2		7	147 679
Iraq	2	1			3	229
Jordan	1				1	1 590
Pakistan		4			4	16
Philippines			4	1	5	3 861
Sri Lanka	2				2	2 887
Taiwan			1		1	0
Thailand	1			7	8	12 032
Turkey	3	8			11	0
Total from Asia	13	22	8	9	52	
Grand total	40	56	8	9	113	

Three additional cases imported from Portugal and Spain, one from uncertain origin.

Vaccination histories were available for 43 patients. Only one of the 21 citizens of endemic areas had been immunised compared with six of the 22 citizens of industrial nations. Three of these six persons had received two injections. All vaccinations had been administered between two days and six months before the onset of the disease.

Discussion

Cholera is rarely imported into industrial countries, and within the few recorded cases fewer than half occurred in European or North American citizens. Also secondary infections in industrialised nations are extremely rare. Unfortunately, data concerning cases of visitors from industrial countries treated in the endemic areas are not available; however, incomplete information available from the WHO shows that this is also exceptional. Possibly some travellers were successfully treated without microbiological diagnosis, while the pandemic strain *Vibrio cholerae* 01 El Tor may have caused mild or even asymptomatic infections which remained unrecognised.[5] Our survey therefore covers only one aspect of the problem, albeit the most relevant.

The individual risk per stay in an endemic area cannot be calculated precisely. Nevertheless, given that 40-50 million travellers from industrial nations visited endemic countries in the surveyed period (for an average duration of 10 days, according to unpublished data from the World Tourism Organisation), we estimate the incidence per journey for this population as 1-5 per 1 000 000. Apparently the risk is higher for foreign workers who visit their endemic home country. By comparison the chance of contracting hepatitis A (1 in 1500)[6] or typhoid fever (1 in 25 000)[7] in a Third World country is much greater. Even though experts in the United States and Germany have for several years renounced widespread recommendation for cholera immunisation for tourists, travellers of these nationalities were not excessively afflicted compared with those of countries where cholera vaccination is still widely practised as, for example, in Britain and Switzerland.

Despite the fact that in the reviewed period Morocco reported only two cases of cholera to the WHO, and Tunisia and Turkey reported none at all, these three nations (plus Algeria) were responsible for most imports of cholera into industrialised countries. This reflects both the lack of discipline in notification and the intensive migration occurring in the Mediterranean area. It remains questionable whether the incidence is excessively high in North Africa.

Ghana, Kenya, Zaire, and many other African and Asian states that reported up to 12 000 cases of cholera within the survey period did not export a single infected case to industrialised countries, though they are popular travel destinations.

Among the foreign visitors to endemic areas an excessive proportion of older travellers were affected.[8] This might be linked to the higher incidence of lack of the acidity barrier (antacids, gastrectomy, cimetidine, hypochlorhydria of other origin).[9] On the other hand, the proportion of small children affected in the populations autochthonous to endemic areas was also extremely high.

Not surprisingly persons were infected despite series of complete vaccinations, as cholera vaccines provide only about 50% effectiveness in reducing the incidence of clinical illness for three to six months.[10] By 1973 the WHO—following its resolution WHA 26.55—had already deleted the requirement for a cholera vaccination certificate. Nevertheless, and illogically, this remains mandatory for visitors in some countries. The exact vaccination rates of all partial populations visiting endemic areas is unknown. In the last years, however, some 1% (North Africa) to 70% of Swiss tourists visiting East Africa, West Africa, or Asia were immunised.[8]

In accordance with the WHO we think that cholera vaccination is not necessary for the ordinary tourist, as the incidence

of the disease is minimal, deaths are few, and the costs of such vaccinations would be enormous. Even if immunisation gave 100% protection, some 500 000 tourists would need to be immunised to prevent one imported case of cholera—and it would be extremely difficult to propagate immunisation in citizens of endemic countries. Given that the cost per vaccination is around US $10 (including consultation), each prevented case of cholera would cost 5 million dollars.

Immunisation against cholera should therefore be reserved for the high-risk groups mentioned initially,[2] mainly for medical staff taking care of patients, and additionally for laboratory workers exposed to the vibrio. Whenever a certificate of cholera immunisation is required from other travellers, a single dose of vaccine is sufficient as a mere formality.[2]

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Therapeutic retraction of the foreskin in childhood

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Abstract

A retrospective study was conducted of 91 boys who had had a non-retractable but non-fibrosed prepuce treated by retraction under general anaesthesia. Of the 79 boys who had had symptoms, 67 (85%) obtained relief. Twelve of the 91 patients were later circumcised because of continuing problems.

Retraction of the foreskin alone is a simple and effective alternative to circumcision in managing most boys with a symptomatic, non-retractable prepuce.

Introduction

It is perhaps surprising that a surgical procedure with a history extending almost 4000 years can still be a subject of controversy, yet this is true of circumcision in childhood. Fibrous stenosis of the preputial orifice remains a clear indication for circumcision, but this is not a common condition in the first decade of life. In this age group, a foreskin which cannot be retracted over the glans is more often due to delay in the natural process by which these structures become separate and is not necessarily a pathological condition.[1] None the less, it may be associated with urinary symptoms or attacks of balanoposthitis, which may be aggravated by the process of separation itself. Excision of the foreskin because it has not yet become detached from the glans is a radical measure, though it is common for boys to be referred to a surgeon with this request.

Acceleration of the natural processes by formally retracting the prepuce under general anaesthesia is a logical approach to the problem of relief of symptoms due to a non-retractable, non-fibrosed foreskin in childhood. Review of the world literature over the past decade, however, yielded only one reference to the procedure.[2] We have reviewed the experience of the surgeons at this hospital in the use of the technique and its results over the past six years.

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Patients and methods

Between January 1976 and March 1982, 106 boys underwent retraction of their foreskin under general anaesthesia. Of these, 93 had presented with symptoms and 13 had been referred because of a non-retractable foreskin alone (see table).

Retraction was performed at ages ranging from 6 months to 11 years 11 months (mean 4 years 9 months). Adhesions between prepuce and glans were separated carefully by traction using a gauze swab or by gentle sweeping with a probe. Collections of desquamated material were removed from the subpreputial space and petroleum jelly applied. In 10 cases the prepuce was stretched with forceps. In many cases the parents were asked to retract their child's foreskin and reapply petroleum jelly daily for a week after the operation.

From a review of the case records 13 boys were found to have been circumcised at a later stage. Information on 78 of the remaining 93 patients was obtained at a review clinic (54), by questionnaire to the parents (14), or by letter from their general practitioner (10). Questions were asked about the outcome of the procedure and a gentle attempt made to retract the foreskin. Fifteen boys were lost to follow-up.

For comparison, the complications occurring after 100 circumcisions selected at random from those performed in 1980 were studied retrospectively. The indications for circumcision were non-retractable foreskin, balanoposthitis, urinary symptoms, and phimosis. The mean age at operation was 4 years 11 months. The technique used was excision of the foreskin and wound closure with interrupted absorbable sutures.

Results

The table gives the outcome of the procedure in relation to the presenting features. Of the 79 boys with symptoms, 67 (85%) had obtained relief. Information on retractability of the foreskin was obtained in 73 boys, and in 45 (62%) of these it was fully retractable.