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TYPHOID : THE OUTLOOK IN SOUTH AFRICA

Typhoid fever assumed very large proportions in the Western world during the nineteenth century. Until after 1830 it was not recognized as a different disease from typhus and relapsing fever, and it was not until 1869 that typhoid fever was separately recorded in the death returns for England and Wales. In 1881 the causal bacillus of typhoid was isolated, but before that time epidemiologists had established that cholera and typhoid were spread by the drinking of contaminated water from wells and rivers, and had recognized the part played by pollution with excremental discharges. From 1867 onwards numerous outbreaks of water-borne typhoid were reported on by Government inspectors in England. Great importance, also, in the causation of zymotic diseases was attributed to the pollution of the air by emanations from excremental and other accumulations.

As a result of the sanitary reform movement of the mid-nineteenth century, based on these views, works were constructed in towns to provide wholesome piped water supplies and water-carriage systems of sewerage so as to make it possible to abolish the foul and insanitary latrines which had hitherto been in use. The spread of these sanitary works through England and Wales was associated with a steady decline in the incidence of typhoid. In the first quinquennium (1871-75) after the disease was registered the annual typhoid death rate was 39 per 100,000 population. In 25 years (to the turn of the century) the rate fell by about 50 per cent, in 50 years (to 1921-25) by 96 per cent, and in 74 years (1945-49) by 99·6 per cent. The decline has continued still further since 1950, especially the *S. typhosus* infection; the majority of enteric cases in Britain now are the result of *S. paratyphosus* infection.

During the half-century 1871-75 to 1921-25, the 96 per cent reduction can be ascribed mainly to improved sanitation. Amongst the other factors that contributed to the result during the latter part of the period may be counted the control of sewage-polluted shellfish, the reduction in fly prevalence, and the hospital isolation of typhoid patients, which enabled some bacteriological control to be exercised over the discharge of patients from isolation. Certainly there was no generalized searching out of carriers, and, in the civilian population, no general use of anti-typhoid vaccine, nor had the antibiotic treatment of typhoid cases been introduced at that time. It may safely be concluded that the remarkable decline in the disease that took place in England and Wales during that 50-year period was in the main due to the general provision of pure water supplies and of water-borne sewerage.

Since 1925 the disappearance of typhoid in England has gone on apace, and in more recent years the mortality figures have been reduced by the improved methods of medical treatment that are now available. The control of carriers has become more efficient and is probably playing a greater role than formerly. As the number of cases—and consequently the number of carriers—becomes smaller, so it becomes possible to devote closer attention to the tracing of the source of infection in individual cases and to the control of every carrier who is discovered.

In South Africa typhoid has long been prevalent. Satisfactory long-term statistics for the whole population of the Union are not available, but the annual reports of the medical officer of health of Cape Town contain records for Europeans and non-Europeans since the amalgamation of the municipality in 1913. These show that for the quinquennium 1916-20 the annual Cape Town death rate from typhoid (34 per 100,000 population) was only a little less than the figure for England and Wales when typhoid deaths were first separately recorded (39 per 100,000, 1861-75). At that time (1916-20) the whole municipality of Cape Town was supplied with piped water, but only the central part was provided with water-borne sewerage; the people of the 'southern' and 'northern' suburbs were served with pail closets, which at that period were in the process of being replaced by a sewerage system then under construction. The population of the municipality was about equally divided between Europeans and non-Europeans. Isolation hospital accommodation was provided for typhoid patients.

In the period of 20 years following the quinquennium 1916-20 the typhoid death rate of the municipality fell by about 90 per cent (to 3 per 100,000 per annum in 1936-40). The most evident reason for this decline is found in the water-borne sewerage that had been extended to the whole municipality. Virtually nothing had been done in the way of discovering and controlling typhoid carriers, or the use of anti-typhoid vaccine. Fly prevalence had been reduced. In the investigation of typhoid cases no reason at all had been discovered for suspecting shellfish as a source and, except for a few milk-borne outbreaks, milk supplies did not fall under suspicion to any great extent. Very few cases of paratyphoid fever were discovered.

For 10 years more (1941-51) the typhoid death rate varied about the same level (3 per 100,000), but in subsequent years it has fallen to less than 1 per 100,000 (in 1957 only one typhoid death occurred), probably largely as the result of the antibiotic treatment of patients. (The annual incidence, or notification, rate of typhoid *cases* for 1951-55 was 18 per 100,000 population.) During these last few years an increasing amount of attention has been paid to the discovery and control of typhoid carriers. In the City Hospital for Infectious Diseases every typhoid patient is detained until, if this can be achieved, he is no longer excreting *S. typhosus*. It is hoped that the use of chloramphenicol in the treatment of cases will lead to a reduction in the number of carriers developing, which will tend still further to stay the spread of the disease.

Thus experience in Cape Town, like that of many other cities and countries, emphasizes that (besides a pure water supply) the primary requisite for the prevention of typhoid

fever is the provision of water-carriage sewerage for human excremental refuse.

Outside the larger cities and a few of the smaller towns water-carriage sewerage is not generally available in South Africa, and water supplies are of varying degree of purity or pollution. In most smaller towns and villages pail closets are in use, with resulting nuisance and danger to health, and this applies to many peri-urban and rural areas. Like the larger cities, the population in the pail-closet areas comprises Bantu and other non-Whites as well as Europeans. In some regions there are few privies at all and the bush is used for urination and defaecation. No complete statistical expression is available of the degree of typhoid infection which exists in these insanitary regions, but local epidemics are often reported and there is known to be a high typhoid endemicity in many places in the Union. In many of these areas, also, no hospital is available for the reception of cases of the disease.

It is evident that the problem of typhoid in towns that are provided with good water supplies and water-carriage sewerage is to be approached from a very different point of view from towns and villages that lack these sanitary essentials. The sewered towns of South Africa are in much the same favourable position as the rest of the Western world with, however, the important difference that, unlike English towns, for example, they have a kind of 'hinterland' of typhoid infection. So long as uncontrolled migration is taking place into a city from parts of the country, near or far, where typhoid is endemic, especially of non-European servants and labourers, typhoid carriers will be introduced into the city. This will tend to counteract the reduction in the number of carriers that naturally follows the local prevention of typhoid; and it will stand in the way of the virtual extinction of typhoid fever that is taking place in some countries.

The articles on typhoid fever that are published in this issue of the *Journal* should bring readers up to date on certain aspects of the problem. They are not only of interest to medical practitioners, but they indicate some of the essential factors that concern the health authorities—local, provincial and central. It is the private practitioner who is normally the first to recognize the case of typhoid fever, and his help is needed by the authorities in tracing the source of infection, uncovering carriers, and controlling cases, carriers and contacts. The Union Health Department places facilities for bacteriological diagnosis at the disposal of practitioners in all parts of the Union. In view of the great importance of early antibiotic treatment doctors are urged to send blood for examination at the earliest moment in all suspicious cases, if possible during the first week. The Widal test, so much used in the past, is not today considered to be of value in early diagnosis.

It is important that municipal health departments should intensify the search for carriers and their relation to outbreaks of the disease, and should organize effective supervision of carriers and their exclusion from acting as food handlers. Equally important, perhaps, is the isolation of typhoid cases and their screening before discharge with a view to preventing the premature liberation of carriers. It is also the function of these departments to organize the protection of food and drink from excremental contamination and the consequent risk of typhoid infection. Important under this heading are the production and distribution of milk and milk products; the processing, preparation and serving of foodstuffs, especially those that are eaten cold; and fly control.

These preventive measures are even more urgently required in unsewered towns and villages, in places where the water supply is dangerous or suspect, and where no satisfactory provision is made for the isolation of typhoid cases. Yet in unsewered towns the importance of these measures is secondary to the need for water-carriage sewerage, and similar considerations apply to a safe water supply and isolation accommodation. Moreover, in the places where these fundamental requirements are lacking, skilled health officials are also lacking. Where, however, a medical officer of health is available, the doctors in private practice and other enlightened residents should afford him the benefit of their cooperation and support, and should continually impress upon their fellow citizens and the health authority—local, provincial or central—the danger from the insanitary conditions and the possibility of reform.

DIE BETEKENIS VAN GESONDHEIDSMAATREËLS

Een van die mees interessante en treffende hoofstukke in die geskiedenis van siektebestryding in die algemeen, is die opkoms van die beweging in gemeenskappe dwarsoor die wêreld van die doeltreffende toepassing van gesondheidsmaatreëls. Tesame met die ryping van ons insig in die implikasies van die voorkomende medisyne het hierdie aspek van die sosiale medisyne—die herorganisasie van die patrone van gemeenskapslewe op die basis van bekende gesondheidsmaatreëls—'n groot bydrae gemaak tot ons veranderde insig in die globale siektebeeld as sodanig. Siekte het nie meer net 'n besoeking gebly wat aanvaar moet word en met mediese middels behandel moet word nie; dit het ook 'n uitdaging geword wat op die basis van gemeenskapsbeplanning onder beheer gehou kan word.

Die geskiedenis van die voorkoms en bestryding van ingewandskoors oor die afgelope honderd jaar is in hierdie verband 'n treffende voorbeeld. Soos ons in die voorgaande artikel aantoon, het die voorkoms van maagkoors in van die ouere Westerse lande en ook in Suid-Afrika met meer as 99 persent gedaal—maar dit het plaasgevind hoofsaaklik in gebiede waar bevredigende beheer uitgeoefen word oor watervoorsiening, waar 'n stelsel van water-rioelering bestaan en waar daar fasiliteite is vir die afsondering van besmetlike gevalle en vir die beheer van voedselhantering in al sy aspekte.

Op grond van die ondervinding in sommige van die Westerse lande wil dit lyk of dit moontlik mag word om maagkoors heeltemal onder beheer te bring op die grond van volgehoue en doeltreffende gesondheidsmaatreëls van die soort wat ons hierbo genoem het. En beheer oor die siekte en die voorkoming van nuwe gevalle moet sonder twyfel 'n goeie uitwerking hê op die sekondêre en moeilik hanteerbare probleem van die gesonde draers van die maagkoorskiem. Want hoe minder nuwe gevalle voorkom, hoe minder draers sal daar wees.

Ons noem die oorwegings net weer hier om 'n perspek-

tiewe blik te kan werp op ons eie toestande in Suid-Afrika en op die spesiale vorm en omvang van die uitdaging waarvoor ons in hierdie land staan.

Omrede van die uitgestrekte gebiede van ons land en ook as gevolg van sommige van ons arbeidsreëlings bly ons blootgestel aan invalle uit besmette en onbeheerde focusgebiede—'n toestand wat nie net die positiewe uitwerking van bestaande gesondheidsmaatreëls omver werp nie, maar wat ook die reeds moeilike probleem van die draer kunsmatig aan die gang hou.

Vir die doeltreffende bekamping van hierdie siekte in ons land en die voorkoming van sporadiese epidemies soos wat van tyd tot tyd in ons grotere stede en elders voorkom, sal ons moet reken op 'n verbeeldingryke en omvattende stelsel van beplanning wat in die eerste instansie sal moet uitgaan van die Departement Uniegesondheid. Ons is dankbaar om te kan sê dat hierdie Departement alreeds alle moontlike fasiliteite op hierdie gebied in werking probeer stel. As 'n mediese professie en as 'n gemeenskap is dit ons plig om die Departement te steun. Daar is egter ook talle plaaslike liggame dwarsoor die land wat dank en aanmoediging verdien.

Ons weet *wat* in 'n groot mate die antwoord op die probleem van ingewandskoors is: goeie watervoorsiening, 'n waterstelsel van rioelering, beheer oor voedselhantering, beheer oor ander verspreidingsmaniere van kieme, soos byvoorbeeld deur vlieë, die hantering van die draertoestand en, laastens, die aktiewe behandeling in hospitale onder toestande van afsondering, van akute gevalle. Hoe om hierdie antwoord as daadsaak te bewerkstellig in ons land met sy menigvuldigheid van probleme en toestande, is die uitdaging, maar ook die geleentheid, wat die toekoms aan ons stel.