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The changing epidemiology of recurrent pyogenic cholangitis

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Recurrent pyogenic cholangitis is prevalent in Hong Kong and East Asia. While the recent influx of Asian immigrants has resulted in more cases appearing in the West, over the past three decades, the overall incidence in East Asia has been in decline. The experience of the Queen Mary Hospital and other hospitals in the region has been confirmed by comprehensive surveys. The decline in incidence has been attributed to the improved economic situation and living standards with the associated westernisation of diet.

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Key words: Cholangitis; Biliary tract diseases; Epidemiologic factors

Introduction

The term recurrent pyogenic cholangitis (RPC) was proposed by Cook in 1954¹ to describe a disease entity characterised by repeated primary infection of the biliary system by pus-forming bacteria with subsequent formation of multiple stones and strictures in the biliary tree. However, it was Digby who in 1930 first described the disease in Hong Kong Chinese.² In comparing the biliary calculus disease of Chinese with that in Caucasians, Digby stated "In Chinese patients, as seen in Hong Kong, we find an entirely different clinical picture." The disease came to be known as Hong Kong disease.³ Further comprehensive studies by Ong⁴ confirmed that, in contrast with Western gallstone disease, RPC affects a completely different patient population. The condition is prevalent in East Asia and is more common in rural areas. Both men and women of lower socio-economic class are equally affected, with a peak age incidence in the third and fourth decades of life.

The changing epidemiology

Recurrent pyogenic cholangitis is rare in the West where many of the reported cases have been immigrants from Asia.^{3,5} A necropsy study by Lindström⁶ identified only five patients with intrahepatic stones

of 804 patients (0.6%) with biliary calculi. As a result of the recent increased number of Asian immigrants to the West, the disease is now encountered more frequently,⁷ particularly in cities with large Asian populations. Glenn and Moody reported, however, that the incidence of biliary tract diseases in the offspring of Chinese and Japanese immigrants in the United States are not different from that found in the population in general,⁸ suggesting that environmental, rather than ethnic factors, are implicated in the pathogenesis of RPC; thus, the recent increase in RPC can only be transient. By contrast, in East Asia, it is the general impression of most clinicians involved with the management of this disease that over the past three decades, the incidence of RPC has been in decline.

Individual hospital survey

The true incidence of RPC is difficult to assess; its prevalence is usually indicated by the relative incidence among all patients with biliary calculi. In the 1960s, RPC was the third most common abdominal surgical emergency and the most common surgical condition affecting the biliary tree present in patients at Queen Mary Hospital.⁹ Over the ensuing three decades, although the number of cases of RPC seen at the hospital has declined slowly, the relative incidence among all patients with biliary calculi has decreased considerably. In the original series (from 1950 to 1952) in which Cook first used the term RPC,¹ an average of 30 patients with RPC were seen each year at the Queen Mary Hospital. Fung used the term cholangiohepatitis¹⁰ and reported that 24.2 patients per year were seen in the period 1948 to 1958, accounting for 58% of all patients with biliary calculi. More recently, Fan and

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colleagues reported that from 1984 to 1989, the number of cases seen at the hospital each year was 22.8, and accounted for only 12% of all patients with biliary calculi.¹¹ There are several ways to interpret this change: (1) given the decreasing number of cases despite a growing population in Hong Kong, the true incidence of RPC is decreasing; (2) the decrease in relative incidence is related to a marked increase of other cholelithiasis; or (3) the difference is related to a change in the referral pattern of the hospital.

The Table shows the most common hepatobiliary diseases of patients undergoing operation at Queen Mary Hospital between January 1994 and December 1995. Compared with the report by Fung in 1961,¹⁰ when RPC was the most common hepatobiliary disease, RPC is now fourth on the list. Although a difference in referral pattern might be a reason for this change, a decrease in the true incidence of RPC seems more likely. Similarly, other hospitals in the region have also experienced a fall in the number of cases of RPC. In Taiwan, Chang and Passaro showed that the number of cases seen at the Tri-Service General Hospital decreased by half in the decade after 1974,¹² while the relative incidence at the Veterans General Hospital-Taipei decreased marginally from 14% in the 1970s to 12% in the 1980s.¹³

Nationwide survey

Taiwan probably has the highest relative incidence of RPC of all Asian countries. A retrospective survey by Nakayama and colleagues,¹⁴ from 1976 to 1980,

Table. Hepatobiliary diseases of patients undergoing operation at Queen Mary Hospital (Jan 1994 - Dec 1995)

Disease	No. of patients	(%)
Cholelithiasis	216	(44.1)
Hepatocellular carcinoma	104	(21.2)
Other liver tumours	68	(13.9)
Recurrent pyogenic cholangitis	33	(6.7)
Carcinoma of the pancreas	22	(4.5)
Others	47	(9.6)
Total	490	

showed that the relative incidence of RPC was 53.5% in Taiwan, much higher than the incidences of Japan, Hong Kong, and Singapore. The Taiwan figure was reported from Kaohsiung Medical College, which was the only major hepatobiliary referring centre in southern Taiwan. A nationwide cooperative study of 17 182 patients with biliary calculi disease from 28 medical centres in Taiwan,¹³ however, showed a lower average incidence of 20.0% for the whole of Taiwan, with a decreasing trend most noticeable in the northern part. From 1981 to 1989, the proportion of patients with hepatolithiasis decreased from 21.3% to 18.7% while the percentage with gallbladder stones increased from 50.8% to 63.0%. In Japan, a nationwide survey of 330 institutions in the 1970s revealed 1590 patients with RPC of 38 606 patients (4.1%) with biliary calculi who were undergoing operation.¹⁵ Compared with the pre-war years, the incidence was decreasing and the decrease was most marked in urban areas.

Changing epidemiology in relation to aetiology

It is known that RPC predominantly affects the lower socio-economic class and is more common in rural rather than urban areas.^{16,17} Increased wealth and improved living standards with associated westernisation of diet are thought to be involved in the changing epidemiology of RPC in Asian countries. With the rapid growth of the per capita national income in these countries, the improvement of environmental hygiene and living conditions decreases the chance of recurrent enteric infection and portal bacteraemia, which is the main source of the biliary pathogens.⁴ Data on per capita daily nutrient availability in Taiwan in the 1970s and 1980s reveals a trend towards more protein and fat and less carbohydrate in the general diet.¹³

The traditional Oriental diet containing high carbohydrate, low protein, and low saturated fat has been incriminated as an important aetiological factor for RPC. Saturated fat causes cholecystokinin release and relaxation of the sphincter of Oddi¹⁸ and a diet low in fat content may lead to a relative increase in biliary stasis. From animal and human studies, a low protein diet is responsible for a decreased bile level of glucaro-1:4-lactone, which is the leading inhibitor of bacterial β -glucuronidase,¹⁹ the enzyme responsible for the splitting of bilirubin diglucuronide into insoluble unconjugated bilirubin, thereby forming calcium bilirubinate stones. Thus, the improvement in economic status and the consumption of a more Western-style diet containing more protein and saturated fat may have contributed to the decreasing incidence of intrahepatic

stones and the concomitant increasing incidence of cholesterol gallbladder stones.

Whether the eradication of parasites such as *Clonorchis sinensis* or *Ascaris lumbricoides* has been responsible for the decline in incidence of RPC remains doubtful. Although the endemic areas for these parasitic infestations correspond to those of RPC,¹¹ the proportion of RPC patients with proven parasitic infestation does not differ from that of the general population.⁴ Despite the low incidence of *Clonorchis* infestation in Taiwan, and the virtual eradication of parasites in Japan in the 1950s, both countries still have a high incidence of RPC.

Conclusion

Both individual hospital experience and nationwide surveys indicate that the incidence of RPC in East Asia is declining. It is difficult to predict whether this trend will continue. At present, RPC is still a common clinical problem in this part of the world as those who have the disease in their early life continue to present with acute cholangitis, jaundice, portal hypertension, or cholangiocarcinoma. For years to come, clinicians in Hong Kong and East Asia will need to be aware of and treat this potentially lethal biliary tract infection.

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