The Mystery of Jejudo in Cholangiocarcinoma and chronic *Clonorchis sinensis* Infection

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Abstract

In spite of the negligible prevalence of *Clonorchis sinensis* infection in Jejudo, the incidence rates in intrahepatic and extrahepatic cholangiocarcinomas(CCA) in women who resided in Jejudo showed the first order in Korea. This fact would bring a chance to evaluate some risk factors of CCA because approximately 10% of CCA in Korea were allegedly caused by chronic *Clonorchis sinensis* infections. (J Med Life Sci 2012;9(2):82-83)

Key Words : Biliary Tract Neoplasms, Incidence, Cholangiocarcinoma, Gallbladder Neoplasms

서 론

Shin et al. have argued that approximately 10% of cholangiocarcinomas (CCA) in Korea were caused by chronic *Clonorchis sinensis* infections [1]. In order to estimate the population-attributable fraction (PAF), authors used the data (table 3) from national surveys of intestinal parasites [2]. But reference 2 has also reported that the estimated number of egg positive case of *Clonorchis sinensis* in Jejudo was 'zero' in table 1. The fact means that the incidence level of CCA in Jejudo could be theoretically interpreted as the outcome with an insignificant effect of chronic *Clonorchis sinensis* infection.

However, table 2 in reference 1 showed the incidence rates in intrahepatic and extrahepatic CCA in men resided in Jejudo took place as the same level in overall regions, but was not the lowest in Korea. Interestingly those in Jejudo women showed the first order, which Shin et al. did not point out. In addition, while CCA has a male predominance in overall incidence [3], the sex ratio (incidence ratio between men and women) was the lowest in Jejudo, especially in intrahepatic CCA (Table 1).

Table 1. Sex ratio of incidence rates in Cholangiocarcinoma (CCA) in Korea *

Age	Intrahepatic CCA		Extrahepatic CCA	
	99-02	03-05	99-02	03-05
Overall	2.33	2.14	2.19	2.06
Seoul	1.86	1.80	1.86	2.07
Busan	1.84	2.04	1.67	1.86
Daegu	2.65	2.28	2.18	1.74
Incheon	2.33	1.71	2.38	1.60
Gwangju	3.07	2.79	2.56	2.50
Daejeon	2.75	2.56	1.93	1.80
Ulsan	3.19	2.35	2.65	1.55
Gyeounggi	2.00	1.94	2.07	2.23
Gangwon	2.22	1.71	3.00	2.08
Chungbuk	2.31	1.88	1.79	1.53
Chungnam	1.94	2.28	2.42	2.42
Jeonbuk	3.31	2.86	2.22	2.31
Jeonnam	1.78	2.23	2.11	1.87
Gyeongbuk	2.85	2.28	2.39	2.75
Gyeongnam	1.78	2.23	2.11	1.87
Jejudo	1.55	1.56	1.78	1.94

*Modified from Table 2 in Reference [1].

These facts could not be explained by the hypothesis of chronic *Clonorchis sinensis* infections suggested by Shin et al. In this context, I have 3 major questions. Firstly, why do residents of Jejudo not have the lowest incidence rate in intra- and extra-hepatic CCA in Korea in spite of the lowest infestation of *Clonorchis sinensis*? Secondly, why do women in Jejudo have the leading incidence rates in intra- and extra-hepatic CCA in Korea? Finally, why does the sex

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ratio in Jejudo show the lowest level in Korean while men in Jejudo do not have the lowest incidence rate?

For answering these questions, we shall evaluate a proportion of incidental (unexpected) CCA with the diagnosis of biliary lithiasis or biliary tract infection. The main reason of regionally different patterns of clinical managements in biliary diseases would make a bias in calculating incidence rates [4]. And, we shall compare the incidence of CCA with that of gallbladder cancer because sharing risk factors – for examples, cholelithiasis, advanced age, congenital biliary cysts, obesity, and smoking– between CCA and gallbladder cancer [3], as well as the common embryologic and histologic features of the bile ducts and gallbladder [5].

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