Prevalence of Cirrhosis Registered in Nakhon Nayok, Thailand

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Objective: *To determine population-based prevalence rates of cirrhosis in Nakhon Nayok Province and patterns of the prevalence by sex, age groups and disease type.*
Material and Method: *A retrospective descriptive study of medical record database was performed in all hospitals in the province of Nakhon Nayok during the year 2007. ICD-10 was used to identify patients with cirrhosis. Patient information was collected, including name, sex, address and age and data of population of Nakhon Nayok Province stratified by 5 year-age groups, sex and district of the province were obtained. Crude and standardised prevalence rates were calculated using WHO (2000) standard population.*
Results: *There were 199 cirrhosis patients comprising 111 males (55.8%) and 88 females (44.2%) with average age of 54.7 years (SD, 13.0). Crude prevalence rate per 100,000 was 86.3 (95% CI: 74.3-98.3) and age standardized prevalence rate was 75.3 (95% CI: 64.8-85.8). Prevalence of alcoholic cirrhosis was 53.6 (95% CI: 44.8-62.5) and 21.7 (95% CI: 16.0-27.4) for non-alcoholic cirrhosis. Alcoholic cirrhosis in male was found in younger age groups than older age. The prevalence rates vary among four districts.*
Discussion: *In this rural area in the central part of Thailand, the standardized prevalence rates is 75.3 per 100,000 and the prevalence is more common in male than female especially for alcoholic cirrhosis. Prevalence of cirrhosis starts to rise from age of 30 to 60 years. Age distributions of non alcoholic cirrhosis in males and females are similar but in alcoholic cirrhosis the magnitude of prevalence in male is higher than female. Alcoholic cirrhosis is 2.6 folds more prevalent than non-alcoholic cirrhosis.*

Keywords: *Cirrhosis, Nakhon Nayok, Prevalence, Age standardized rates, Alcoholic cirrhosis, Non-alcoholic cirrhosis, Sex difference*

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Globally, cirrhosis is one of the leading causes of deaths with annual mortality of 786,000. Worldwide mortality rate was 12.6 per 100,000 accounting for 1.4% of all causes of deaths in 2002[1]. The estimated deaths of cirrhosis in Thailand were 9,131 deaths each year with the crude rates of 8.9 per 100,000 population[1]. Cirrhosis is one of the ten leading causes of burdens of diseases in males aged 30-59 in Thailand in 1999[2]. The mortality rate in Thailand was shown to be increased while downward trends of mortality were observed in Hong Kong and Singapore[3]. Hepatitis B and C and alcohol consumption have been indicated as the main risk factors and probably contributing to the trend of the disease. Magnitudes of population with cirrhosis are useful for health authority for resource planning. Population data of the prevalence of the disease have not been studied in Thailand. This study therefore aims to quantify population-based prevalence of cirrhosis in Nakhon Nayok Province which is located in the central part of Thailand and also to examine distributions of the prevalence by sex, age groups, geography and type of the disease.

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Material and Method

The study design was a descriptive cross-sectional study. Medical records of patients who were diagnosed as cirrhosis were identified from electronic medical database from 6 hospitals in the province of Nakhon Nayok which is located in the central part of Thailand. These include three community hospitals (Banna, Ongkharak, Pakplea Hospital) one general hospital (Nakhon Nayok Hospital), one military hospital (King Chulalongkorn Army Hospital) and one university hospital (Mahachakri Siridhon Medical Center). The study included patients with cirrhosis who were diagnosed between January and December 2007 with ICD-10 of K70.3 (Alcoholic cirrhosis of liver Alcoholic cirrhosis NOS), K71.7 (Toxic liver disease with fibrosis and cirrhosis of liver), K74 (Fibrosis and cirrhosis of liver), K74.0 (Hepatic fibrosis), K74.1 (Hepatic sclerosis), K74.2 (Hepatic fibrosis with hepatic sclerosis), K74.3 (Primary biliary cirrhosis Chronic nonsuppurative destructive cholangitis), K74.4 (Secondary biliary cirrhosis), K74.5 (Biliary cirrhosis, unspecified), K74.6 (Other and unspecified cirrhosis of liver). Demographic information of these patients was collected, including name, sex, home address and age. Data from all sources were pooled in one dataset to find and delete duplication of data. Data of population of Nakhon Nayok Province stratified by 5 year-age groups, sex and district of the province were obtained from the local branch of Department of Population Registry. Alcoholic cirrhosis was defined as the code of K70.3 in ICD-10. The study was approved by the ethic committee at the Faculty of Medicine, Srinakharinwirot University. Analyses were performed using MS Excel Spreadsheet to calculate sum and percent. Crude and standardised prevalence rates were calculated per 100,000 population. WHO (2000) standard population was used for standard population[4]. Ninety-five percent confidence intervals were calculated for prevalence rates and age standardized rates.

Results

There were 199 cirrhosis patients from Nakhon Nayok Province during the year 2007 comprising 111 males (55.8%) and 88 females (44.2%). Age characteristics of the patients are: means of 54.7 years (SD, 13.0) and median of 54 years (min-max, 24-90). In Table 1, crude prevalence rate per 100,000 was 86.3 (95% CI: 74.3-98.3) and age standardized prevalence rate was 75.3 (95% CI: 64.8-85.8). Age standardized rates of the prevalence male and female were 95.7 (95% CI: 77.9-113.5) and 76.8 (60.7-92.8) respectively with the ratio of male to female of 1.35:1. When classifying by ICD-10, standardized prevalence rates for alcoholic cirrhosis was 53.6 (95% CI: 44.8-62.5) and 21.7 (95% CI: 16.0-27.4) for non-alcoholic cirrhosis with the ratio of the alcoholic to non-alcoholic cirrhosis of 2.4:1. Age specific rates of prevalence were presented in the Table 2, prevalence rates were high for the age groups of 40 to 60 year old and 75 year old in both sexes but the rates in women were slightly lower than those of men. When examining patterns of the disease by types of cirrhosis categorized into alcoholic and non alcoholic cirrhosis as seen in and Fig. 1, prevalence rates in males were higher significantly (p-value = 0.03) for younger age groups compared to females in alcoholic cirrhosis; however no differences of the comparison were found in non-alcoholic cirrhosis. In Fig. 1, patterns of the curves of prevalence rates of male and female alcoholic cirrhosis were elevated in early age groups starting from 30 year old however male's had higher magnitude. For non-alcoholic cirrhosis that patterns were very similar. Notably, patterns of alcoholic cirrhosis prevalence were declined after reaching plateau while the patterns of the non alcoholic seemed to be steadily increased. For geographic patterns (Table 3), highest prevalence rates of cirrhosis were observed in Muang District which is mainly located in the urban area while lowest prevalence was found in Ongkharak District where majority of population are Muslim inhabitants. Muang District had a lower proportion of alcoholic cirrhosis than other districts.

Discussion

The age standardized prevalence rate of cirrhosis in this study was found to be 75.3 (74.9-75.6) per 100,000. The finding is similar to data from UK in 2001 with the rate of 76.3 per 100,000[5]. The UK study reported prevalence rates per 100,000 population of 65.9 and 87.2 in males and females respectively. While in this study the similar rates were found in males and females (87.4 and 64.2 respectively). The ratio of prevalence rates in male and female was 1.35:1 which is approximately similar to previous report in 1999[2] prevalence cases in male of 17,386 and in female of 12,241 (male: female of 1.4:1); however, the prevalence ratios of male to female are different. Male to female ratio in alcoholic cirrhosis is 1.34:1 and the ratio for non-alcoholic cirrhosis is 1.07:1. That is the ratio of overall cirrhosis is very similar to alcoholic cirrhosis indicating that cirrhosis in males is 34% higher in male than female while the same rates were found in non-alcoholic cirrhosis. The increased prevalence of alcoholic cir-

Table 1. Crude prevalence rate and age standardized rate per 100,000

	No. cases	Total population	Crude prevalence rate (95% CI)	Age standardized prevalence rate (95% CI)
All cases	199	230, 563	86.3 (74.3-98.3)	75.3 (64.8-85.8)
Male	111	115, 941	95.7 (77.9-113.5)	87.4 (71.1-103.8)
Female	88	114, 622	76.8 (60.7-92.8)	64.2 (50.6-77.7)
Alcoholic cirrhosis	143	230, 563	62.0 (51.9-72.2)	53.6 (44.8-62.5)
Non-alcoholic cirrhosis	56	230, 563	24.3 (17.9-30.6)	21.7 (16.0-27.4)

Table 2. Age specific incidence rates per 100,000 population by sex and type of cirrhosis

Age	0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-
All	0.0	0.0	0.0	0.0	5.4	10.8	37.6	77.6	159.0	171.5	179.5	280.1	238.1	191.1	115.9	228.5	155.8	86.2
Male	0.0	0.0	0.0	0.0	10.0	21.5	52.8	82.3	215.3	202.2	263.5	264.3	236.2	170.5	73.1	279.2	303.0	0.0
Female	0.0	0.0	0.0	0.0	0.0	0.0	21.8	71.1	106.1	143.2	104.6	293.7	239.6	207.9	163.9	193.4	63.4	131.8

Table 3. Crude and age standardized prevalence rates per 100,000 by district

District	Case	Population	Crude rate	95% (CI)	Age standardised rate	95% (CI)	Alcoholic cirrhosis No. (%)	Non alcoholic cirrhosis No. (%)
Mueang	104	92,141	112.9	91.2-134.6	101.4	81.5-121.3	68 (65.4)	36 (34.7)
Ban Na	47	61,766	76.1	54.3-97.8	66.5	47.4-85.6	36 (76.6)	11 (23.5)
Ongkharak	26	54,454	47.7	29.4-66.1	44.6	27.2-61.9	21 (80.8)	5 (19.3)
Pak Phli	22	22,202	99.1	57.7-140.5	77.5	44.9-110.0	18 (81.9)	4 (18.2)

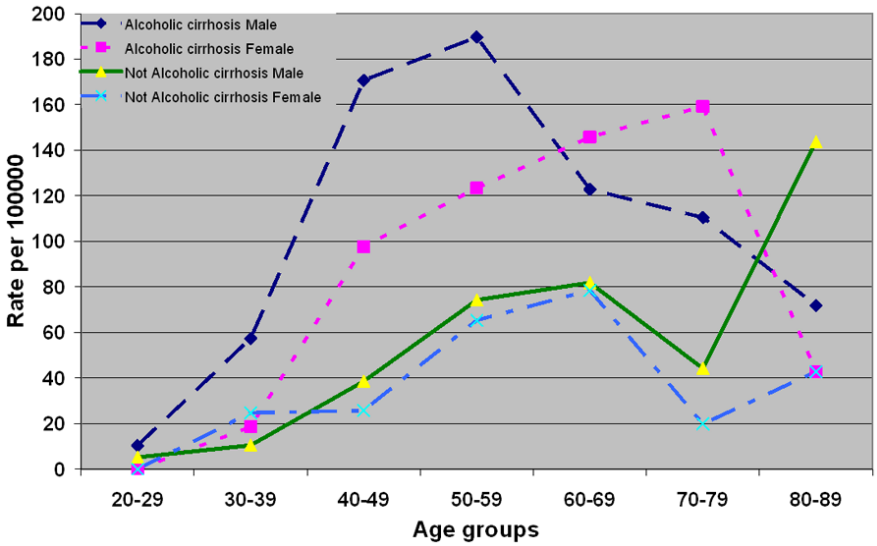

Fig. 1 Prevalence rates of cirrhosis by type of cirrhosis, age and sex.

rhosis in females may reflect the difference of consumptions of alcoholic drink in Thailand. The report of survey for risk factors for non-communicable diseases showed that prevalence rates of alcohol drink in the past 12 months were 59.1% (95% CI: 58.0-60.2) for males and 16.9% (95% CI: 16.1-17.6)[6].

For gender differences in alcoholic cirrhosis, elevated rates were found in male than female in the age of less than 60 year old but after that females have higher rates but the size of difference in the former is larger than the later. The increased rates in men particularly in alcoholic cirrhosis are probably due to higher alcoholic drink in men as found in general population as shown in a national survey in 2005 that men drink 3.7 times as much as women[6]. For age distribution of cirrhosis, rates of alcoholic cirrhosis in men and women start to increase at the age of 30 years and reach the peaks around 50-60 years old while the prevalence of non-alcoholic cirrhosis slowly increases from 30-40 year old and becomes highest at 60-70 year old. This observation shows that progressions of non-alcoholic cirrhosis may be slower than the alcoholic cirrhosis or exposure to the risk factors of non-alcoholic cirrhosis such as hepatitis B and C may occur later than alcohol consumption.

In this population, prevalence rates of alcoholic cirrhosis is higher than non alcoholic cirrhosis (2.6:1) and the ratios were slightly higher in men (2.8) than women (2.3). This pattern of types of cirrhosis suggest higher of alcohol consumption on cirrhosis in this population than etiologies of non alcoholic cirrhosis. The survey[6] shows that prevalence rate of alcoholic drink this province (29%) is slightly lower than the national level (37%). Given higher effect of alcoholic, only slightly lower of alcohol consumption and similar population pyramids between the country and the province, it could be therefore inferred that the national prevalence rates of cirrhosis may be similar or just slightly smaller than the figure from this study.

Geographical patterns of cirrhosis (Table 3) indicated that the district in the municipal area (Muang District) has a higher prevalence rate than the rest of districts which are located in rural areas. Notably the age standardised prevalence rate in Ongkharak District is lower than other districts possibly because the proportions of Muslim population in this district is higher than the others. Population here probably drink less than the others. The prevalence rates in rural areas show similar ratio (3:1) between alcoholic and non alcoholic cirrhosis.

However, the study has some limitations. It is not known the methods of diagnosis of these patients. This may lead to diagnostic suspicious bias. Another concern is that the population size in this study is rather small and as a result, the estimate may reduce the precision of the estimate. Moreover, the variables on religions, history of hepatitis and diet were not available.

In conclusion, in this rural area in the central part of Thailand, the standardized prevalence rates of 75.3 per 100,000 and the prevalence is more common in male than female especially for alcoholic cirrhosis. Prevalence of cirrhosis starts to rise from age 30 to 60 years old. Age distributions of non alcoholic cirrhosis male and female are similar but in alcoholic cirrhosis the magnitude of prevalence in male is higher than female. Alcoholic cirrhosis is 2.6 folds more prevalent than non-alcoholic cirrhosis.

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ความชุกของโรคตับแข็งของผู้ป่วยที่มารักษาในจังหวัดนครนายก ประเทศไทย

สุธีร์ รัตนะมงคลกุล, ชัชวาลย์ วงศ์จิตรัตน์, พิเชษฐ พัวพันกิจเจริญ

วัตถุประสงค์*: เพื่อศึกษาความชุกในระดับประชากรของโรคตับแข็งในจังหวัดนครนายกและรูปแบบของความชุกในจำแนกตามเพศ อายุ และประเภทของโรคตับแข็ง*

วัสดุและวิธีการ*: เป็นการศึกษาย้อนหลังจากเวชระเบียนในโรงพยาบาลทุกแห่งในจังหวัดนครนายกในปี พ.ศ. 2550 โดยใช้ ICD-10 ในการระบุโรคและมีการเก็บข้อมูล อายุ เพศ และที่อยู่โดยใช้ข้อมูลฐานประชากรในการคำนวณอัตราความชุกมีการวิเคราะห์ความชุกตามอายุโดยใช้ฐานประชากรมาตรฐานของ WHO (2000)*

ผลการศึกษา*: ข้อมูลประกอบด้วยผู้ป่วยโรคตับแข็งจำนวน 119 คน จำแนกเป็นเพศชาย 111 คน (55.8%) และเพศหญิง 88 (44.2%) มีค่าเฉลี่ยของอายุเท่ากับ 54.7 ปี (SD, 13.0) โดยมีอัตราความชุกของโรคต่อประชากรแสนคนอยู่ที่ 86.3 (95% CI: 74.3-98.3) และอัตราความชุกเทียบกับประชาการมาตรฐานเท่ากับ 75.3 (95% CI: 64.8-85.8) จำแนกเป็นภาวะตับแข็งที่เกี่ยวข้องกับการดื่มสุราเท่ากับ 53.6 (95% CI: 44.8-62.5) และไม่เกี่ยวข้องกับการดื่มสุราเท่ากับ 21.7 (95% CI: 16.0-27.4) ภาวะตับแข็งที่เกี่ยวข้องกับการดื่มสุรามีสัดส่วนที่พบมากในผู้ชายที่อายุน้อยกว่าในผู้หญิง และพบว่ามีความแตกต่างของความชุกในพื้นที่ระดับอำเภอ*

สรุป*: ในพื้นที่ชบบทภาคกลางที่ศึกษามีความชุกของโรคที่เทียบกับประชากรโลกเท่ากับ 75.3 ต่อแสนประชากร พบภาวะตับแข็งในผู้ชายมากกว่าผู้หญิงโดยเฉพาะตับแข็งที่เกี่ยวข้องกับการดื่มสุรา สำหรับการกระจายตามอายุพบว่าโรคเริ่มพบมากในคนไข้อายุ 30 ไปจนถึง 60 ปี มีการพบตับแข็งที่เกี่ยวข้องกับการดื่มสุรามากกว่าที่ไม่เกี่ยวข้องกับการดื่มสุราถึง 2.6 เท่า*