Incidence of Diabetes Mellitus Type 1 in Children of Southern Thailand

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Abstract

The study was aimed to determine the incidence of diabetes mellitus in children under fifteen years old in southern Thailand. The data of newly diagnosed diabetic patients from 1992 to 1996 were collected by questionaire. The incidence of diabetes mellitus type 1 was 0.52/100,000 population under fifteen years old. There was an increasing trend of this disease over the study period. The peak incidence occurred in the age group 11-15 years. It was more common in females than males.

Key word : Diabetes Mellitus Type 1, Children, Incidence

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J Med Assoc Thai 2001; 84: 1071-1074

Diabetes mellitus type 1 is an important chronic disease worldwide. The incidence varies widely by geographic location and genetic background. The epidemiologic studies revealed a 17-fold[1] difference in the age-adjusted incidence of this disease between the countries with IDDM registration. Diabetes mellitus leads to higher morbidity and mortality and economic burdens. Knowing the incidence and impact of the disease can help in preparation of effective public health measures.

In Thailand, the study by Tuchinda C[2] in 1984 revealed the incidence of 0.19/100,000/year, a very low incidence. In order to update the estimate of incidence of diabetes mellitus in Thailand, multicenter collaborative studies coordinated by Tuchinda C and pediatric endocrinologists working in four regions of Thailand were conducted in the year 1995. This report was the result of the study of the southern region of Thailand.

SUBJECTS AND METHOD

The study was conducted by sending 131 questionaires to the medical directors of all public hospitals in all 14 provinces of southern Thailand.

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The information in the questionaire included the number of new diabetic patients under 15 diagnosed each year from 1992 to 1996, the patients' name and surname, age, sex, date of birth, date of diagnosis and date of starting insulin injection. The data from the questionaires were primary ascertainment. There was no secondary ascertainment because of the lack of a national registration system. Cases with the same name and surname were counted as one case so there were no repeated counts. All cases reported were assumed to be type 1 diabetes mellitus because of the diagnosis of diabetes with insulin injection, and age under 15 years.

The official Thai census of population and housing from 1992 to 1996 was used as the source of data for calculation of the age-corrected incidence.

Incidence rates were calculated per 10^5 population per year.

RESULTS

Of 131 questionaires sent, 111 questionaires were returned. The response rate was 84.7 per cent. In the five year period studied, 49 new diabetic patients under 15 years were diagnosed, 15 males (30.6%) and 34 females (69.4%). The male to female ratio was 1 : 2.3. Details of the number of diabetic patients, sex, the population under 15 years of age and the incidence in each year are shown in Table 1. The average incidence was 0.52 per 100,000.

The ages at diagnosis are demonstrated in Table 2. The age ranged from 2 years to 15 years. When grouped into 3 age groups of 0-5, 6-10, 11-15 years as demonstrated in Table 2, there were 6 cases (12.8%) aged 0-5 years, 14 cases (29.8%) aged 6-10 years and the remaining 27 cases (57.4%) aged 11-15 years. The most common age group was 11-15 years old.

The seasons in Thailand are summer (March to June), rainy season (July to October), winter (November to February). The data of the number of cases diagnosed in each month is demonstrated in Table 3. The highest incidence occurred in August-October, which corresponds to the rainy season for most provinces in the southern region.

Table 1. The number of diabetic patients and incidence of diabetes mellitus in each year.

	Male	Female	Total	Population*	Incidence per 100,000
1992	3	7	10	7,402,000	0.54
1993	3	5	8	7,478,000	0.43
1994	2	8	10	7,603,300	0.53
1995	4	5	9	7,706,208	0.47
1996	3	9	12	7,513,000	0.64
Total	15	34	49		0.52

* Total population, population under 15 years old was estimated to be one-fourth of the total population.

Table 2. The age group at diagnosis.

Age group (year)	Male (No)	Female (No)	Total (No)
0-5	2	4	6
6-10	6	8	14
11-15	7	20	27
Total	15	32	47

Table 3. The month at first diagnosis.

Month	No*	Month	No*
January	3	July	2
February	5	August	6
March	2	September	6
April	4	October	6
May	3	November	4
June	1	December	2

* 5 cases without information about the month diagnosed

DISCUSSION

The incidence of diabetes mellitus in this study was 0.52/100,000, which is very low compared with global figures. The incidence of diabetes mellitus in the north and in the northeast of Thailand was 0.3 and 0.3/100,000 respectively (personal data). The incidence of diabetes mellitus in three regions of Thailand was similar. Thailand is a small country without much ethnic variation, so this may explain the similar incidence in each region. When compared with other countries in Asia, we found that the incidence of diabetes mellitus type 1 in Thailand was similar to that reported from China, of 0.51/100,000/yr[3], and from Korea 0.7/100,000/yr[4]. But the incidence of diabetes mellitus type 1 in southern Thailand is much lower than that reported in Finland of 36.4/100,000/yr[5], the highest incidence. The age-adjusted incidence rates in various countries has been reported to differ up to 17-fold[1], and is a very interesting topic for diabetes epidemiologists. Extensive study in genetics and epidemiology may reveal the factors responsible for these differences.

When comparing the incidence in this study with the incidence surveyed by Tuchinda C from 1984 to 1985[2], of 0.19/100,000/yr, it seems that the incidence has shown an increasing trend. The incidence from 1991 to 1995 was 3-fold that of 1984 to 1985. The increased incidence may be a true increase or may be from more coverage of the study. This study did not study the factors that caused the incidence increase. The possible factors may be the changes to a more westernized lifestyle, the decline of breast-feeding of infants and the change from an agricultural to an industrial lifestyle.

Other studies from Hawaii[5], Australia[6], Hongkong[7] etc have also revealed an increasing trend of this disease. There were no definite reasons or evidence explaining this phenomenon but changing genetic susceptibility in the population and change in environmental determinants were probably involved.

About the age at diagnosis, this study showed that the peak incidence occurred in the age group 11-15 years old. The lowest incidence occurred in the age group 0-4 years old. Studies in Europe [8,9] and Australia[6] also showed the same findings.

Regarding the role of sex in diabetes occurrence, this study found that female diabetic patients were twice as common as males. Most other studies such as from China, Hong Kong, Australia, and Hawaii[3,5-7] also showed a female preponderance. But some studies such as from Italy[8,9] showed no significant difference between the sexes.

In conclusion, this study showed that the incidence of IDDM in children under 15 years old in southern Thailand was low. There was an increasing trend of developing diabetes in children. The most frequent age of having diabetes was puberty and females were more prone than males. A population-based registration is important and should be established in Thailand in the future.

ACKNOWLEDGEMENT

The authors wish to thank all the doctors who responded to the questionaires of our study.

(Received for publication on March 5, 2001)

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อุบัติการณ์ของโรคเบาหวานชนิดที่ 1 ในเด็กภาคใต้ของประเทศไทย

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ได้ศึกษาอุบัติการณ์ของโรคเบาหวานชนิดที่ 1 ในเด็กอายุต่ำกว่า 15 ปี ในภาคใต้ของประเทศไทย โดยการส่งแบบสอบถามถึงโรงพยาบาลทุกระดับของทางราชการ พบอุบัติการณ์ของโรคเบาหวานชนิดที่ 1 ในเด็กอายุต่ำกว่า 15 ปี ในปี พ.ศ. 2535-2539 เท่ากับ 0.52/100,000 ของประชากรที่มีอายุต่ำกว่า 15 ปี พบแนวโน้มว่าอุบัติการณ์เพิ่มมากขึ้น กลุ่มอายุที่เกิดโรคเบาหวานสูงสุดคืออายุ 11-15 ปี พบผู้หญิงมากกว่าผู้ชาย

คำสำคัญ : โรคเบาหวานชนิดที่ 1, เด็ก, อุบัติการณ์

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