

## Bell's palsy : a survey study of five-year hospital service.

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*A total number of 1,207 cases of facial palsy diagnosed and treated in Songkhla Neuropsychiatric Hospital between October 1989 and September 1994 were analysed from medical records. Among them, 1,103 cases were idiopathic facial palsy (Bell's palsy) selected for studying crude epidemiological and clinical data. The annual hospital incidence of Bell's palsy here was 39.6 patients per 10,000 on the average. There was no significant difference between both sexes and between both pediatric and adult groups. Both sides of the face could almost equally be affected. No significant prevalence of cases was found in any month of the year. The common age of onset in both sexes was 20-39 years. Diabetes mellitus and hypertension were 6.0 % and 4.2 % associated with Bell's palsy respectively. In pregnant women, it was commonly found during the third trimester and immediate postpartum. The recurrence rate was about 1.5 % and both ipsilateral and contralateral sides of face could be involved.*

**Key words :** *Bell's palsy, Facial palsy.*

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จากการศึกษาข้อมูลในผู้ป่วย *facial palsy* 1,207 ราย ที่มารับบริการในโรงพยาบาล  
ประสาทสงขลาระหว่าง คค. 32 - กย. 37 พบว่า เป็นกลุ่ม *idiopathic facial palsy (Bell's palsy)*  
มากที่สุด คือ 1,103 ราย เฉพาะในกลุ่ม *Bell's palsy* พบว่ามีอัตราการเกิดโรคเฉลี่ย 39 คน:10,000  
รายของผู้ป่วยต่อปี อัตราการเกิดโรคทั้งในชายและหญิง เด็กและผู้ใหญ่ ใกล้เคียงกัน และมีโอกาส  
เกิดได้ทั้งสองข้างของใบหน้าใกล้เคียงกัน โรคนี้เกิดขึ้นได้ตลอดปีเท่ากัน ช่วงอายุที่พบโรคนี้ได้บ่อย  
ในทั้งชายและหญิง คือ 20-39 ปี ในการศึกษาพบ โรคเบาหวาน และความดันโลหิตสูงร่วมอยู่ด้วย  
6.0% และ 4.2% ตามลำดับ ในหญิงมีครรภ์จะพบโรคนี้ได้บ่อยในช่วงไตรมาสที่ 3 และระยะแรก  
หลังคลอด มีอัตรากลับซ้ำประมาณ 1.5% โดยมีอัตราการกลับซ้ำในด้านเดิมและด้านตรงข้าม  
ใกล้เคียงกัน

Bell's palsy or idiopathic facial palsy is a common neurological disorder affecting facial nerves. It causes much distress to patients because it leads to disfiguring facial expressions and exposure keratitis. The etiology of the disease is unknown but Herpes viral infection or reactivation of latent infection are hypothesized.<sup>(1-3)</sup> Genetic factors may predispose someone to be affected, as reported in familial cases.<sup>(4-5)</sup> Association with diabetes mellitus and hypertension also occur. However, all facial palsies are not Bell's palsy. The diagnosis of this disease should be made with caution; careful clinical and laboratory evaluations with exclusion of other possible causes of facial palsy is necessary.

This retrospective study aimed to analyze the crude epidemiological data and clinical presentation of Bell's palsy in Thai population. The sample selected was all of the patients diagnosed with Bell's palsy in Songkhla Neuro-psychiatric Hospital in the 5 year period of 1989-1994.

## Materials and methods

A total number of 1,207 case records of facial palsy, seventh nerve palsy, traumatic facial palsy and Ramsay Hunt syndrome between October 1989 and September 1994 were collected for this study. All patients came from all southern provinces, mostly from Songkha and vicinity. They were treated in Songkhla Neuro-psychiatric Hospital which is a tertiary-care hospital. Most of them (about 95%) were self-attended. By exclusion of the cases that had other known causes of facial palsy, 1,103 cases of Bell's palsy were selected for further study. Age of onset, sex, the side of face involved,

associated disease and pregnancy, month of onset and recurrences were analysed. The diagnosis of Bell's palsy was clinically made by the acute onset of lower motor neuron type facial paralysis and exclusion of the cases that had signs and symptoms of tumor, infection or other systemic illness (eg. fever, lymphadenopathy and weight loss etc.). All of the patients had normal routine blood tests and chest radiography. Percentage, t-test and the chi-square test were used for statistical analysis in this study.

## Results

The causes of facial palsy the in 1,207 cases studied are shown in Table 1.

**Table 1.** Causes of facial palsy.

Idiopathic (Bell's palsy)	1,103	(91.4%)
Trauma	61	} (8.6 %)
Herpes zoster cephalicus	30	
Otitis media	9	
Tumor (acoustic neuroma)	2	
Varicella - zoster	2	
<b>Total</b>	<b>1,207</b>	<b>(100 %)</b>

Among 1,103 cases diagnosed as Bell's palsy, the results of further study are presented below :-

There were 588 male and 515 female patients making up a 53.3% to 46.7% ratio. The hospital annual incidence of Bell's palsy was 39.6 patients per 10,000 on average (range 33.8-48.9 per 10,000 patients). There was no significant difference in the male to female patient ratio in each year. (Table 2)

**Table 2.** Incidence of Bell's palsy patients in Songkha Neuropsychiatric hospital per year during 1989-1994.

Duration	Number(%) of patients with Bell's palsy			Total number of patients	Incidence (:10,000 patients)
	Male	Female	Total		
Oct 1989 - Sep 1990	91 (52.1 %)	82 (47.4 %)	173	51,205	33.8
Oct 1990 - Sep 1991	119 (51.07 %)	114 (48.9 %)	233	54,919	42.4
Oct 1991 - Sep 1992	103 (50.0 %)	103 (50.0 %)	206	54,364	37.9
Oct 1992 - Sep 1993	106 (54.6 %)	88 (45.4 %)	194	55,755	34.8
Oct 1993 - Sep 1994	169 (56.9 %)	128 (43.1 %)	297	60,783	48.9

The average age at the onset of Bell's palsy in this study was 41.84 years (SD. = 18.1). Female patients had slightly higher average ages at onset. For females it was 42.59 years vs 40.98 years for men. No statistical difference was found by t-test analysis ( $p = 0.14$ ). The common age of onset was 20-39 years old in both sexes. In male patients, another common age of onset was 50 years or higher. However, there was no statistical

difference in the distribution of the age of onset in both sexes by chi-square test ( $p=0.329$ ), using 2\*7 table of sexes by decades.

There were 88 pediatric cases (age below 15 years). The ratio of male to female patients in this group compared with that in the adult group and is shown in Table 3. There was no significant difference in the ratio of males to females affected in both groups ( $p = 0.9844$ ).

**Table 3.** Bell's palsy by age group and sex ratio.

Age group	No (%) Bell's palsy	of Number of patients		Male : Female
		Male	Female	
< 15 year	88 (8)	47	41	1.1 : 1
> 15 year	1,015 (92)	541	474	1.1 : 1
Total	1,103 (100)	588	515	1.1 : 1

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There were 561 cases of right facial palsy and 528 cases of left facial palsy (Rt:Lt = 50.9%:47.9%). Fourteen cases (1.3%) were bilateral facial palsy. There was no preponderance of the side of face involved in both sexes ( $p = 0.7149$ ), in both age groups ( $p = 0.1514$ ) and in the correlation with the age of onset divided into seven decades ( $p = 0.2136$ ).

There were more patients in January, May and September than in other months of the year, but no significant prevalence of cases was observed. However, more cases were seen during the rainy season (July to January) with 608 cases (55.1%), whereas 495 cases (44.9%) were seen during the summer.

The majority of cases came to visit our unit within the first week of onset (68.5%). The remainder, 29.4% of the cases visited us 8-30 days and 2.1% of the cases visited us 30 days or more after onset. Most of the patients that came to us after the first week were treated primarily from other hospitals.

The study found associations of hypertension, diabetes mellitus and systemic diseases (eg: asthma, dyslipidemia, etc.) with Bell's palsy in 43 cases (4.2%), 61 cases (6.0%) and 10 cases (0.9%) respectively. No significant difference in the average age of onset of both sexes was found in both hypertensive and diabetic facial palsy patients ( $p=0.29$  and  $0.97$ ) (Table 4).

**Table 4.** Number and mean age of adult patients with Bell's palsy associated with Diabetes mellitus and Hypertension.

	Bell's palsy $\bar{c}$ diabetes mellitus			Bell's palsy $\bar{c}$ hypertension		
	Male	Female	Total	Male	Female	Total
Number of patients	46	15	61	24	19	43
% of total adult Bell's palsy	8.5	3.2	6.0	4.4	4.0	4.2
Mean age $\bar{x} \pm SD$	60.3 $\pm$ 8.2	60.3 $\pm$ 9.1		57.7 $\pm$ 12.0	61.3 $\pm$ 9.5	

Among the female patients studied, eighteen cases (3.5%) experienced facial palsy during their gestational period and immediate postpartum. Seven cases began during the third trimester whereas five cases were found during the second trimester and six cases were found in the immediate postpartum period. No case was found during the first trimester. The rate of recurrence in our study was 1.5% (17 cases). Most of them were single recurrence. Ipsilateral and

contralateral recurrence were found in eight and nine cases respectively. The duration from the first episode to the recurrence was more than one year in 12 cases, from six months to one year in 1 case, from one to six months in 3 cases and less than one month in 1 case. The average age of onset of the patients who had the recurrence was 38.353 years ( $SD=20.811$ ), a little less than the non-recurrent ones but without significant difference ( $p=0.423$ ). Association with hyperten-

sion occurred in 1 case, with diabetes mellitus in 1 case and with other systemic diseases in 1 case. Because of the small size of the sample, no further analysis of these associations was performed.

## Discussion

There were 1,103 cases of Bell's palsy examined in this study. It was the most common cause of facial palsy analysed. Traumatic and herpes zoster infection were the second and the third most common causes. These findings were comparable with those reported by May.<sup>(6)</sup> The annual hospital incidence was not significantly different in the study period. Both sexes can be equally affected and no marked change in the male to female ratio in each year. Women had slightly higher average ages of onset than men in this study, but without statistical difference.

The common age of onset was 20-39 years in both sexes, with bimodal distribution observed in the males. Devriese et al. found the same common age of onset in both sexes but with bimodal distribution in the female.<sup>(7)</sup> Some authors have reported the common age of onset as 20 to 59 years old.<sup>(8)</sup> There was no disagreement in the incidence of the disease in both sexes from comparison with other literature. No difference in the incidence and distribution of the age of onset in both sexes were found in this study (by 2\*7 table chi-square test). Therefore, it can be concluded that the disease can involve both sexes and at any age nearly equally.

No predominant side of facial involvement was found in either sex, in pediatric and adult groups, and in different age groups at onset. This had also been reported by a population base study.<sup>(9-12)</sup>

There was no significant clustering of cases during a year. More cases were seen during the rainy season. Higher rates of viral infection in that period may be the cause.

Most of the cases (68.5%) visited our unit within the first week of onset because of the cosmetic embarrassment.

Association with diabetes mellitus and hypertension was found in 6.0% and 4.2% of the cases respectively. In some studies these figures have varied; 2.5-10% for diabetes mellitus and 8-36% for hypertension.<sup>(7,9,13-14)</sup> By using glucose tolerance test, Mori et al had found that the incidence of diabetes mellitus in patients with Bell's palsy was almost twice that in the general population.<sup>(15)</sup> However, Abraham-Inpinjin and Devriese failed to prove a significant relationship between Bell's palsy and diabetes mellitus using the same test.<sup>(16)</sup> Instead, they found a statistically significant correlation between Bell's palsy and hypertension. Therefore, vascular factors as the pathogenesis of Bell's palsy was also proposed.<sup>(14)</sup> There was no significant sexual difference in onset when Bell's palsy was associated with diabetes mellitus or hypertension. A slightly higher average age of onset was found in women with diabetes mellitus and hypertension in association with Bell's palsy in the study of Devriese et al.<sup>(7)</sup>

Most pregnant women experienced Bell's palsy during their third trimester and immediate post partum period.<sup>(17-19)</sup> It was found in a previous study that the incidence of Bell's palsy during pregnancy was 45:100,000 pregnancies and this was 3.3 times that in non-pregnant women.<sup>(17)</sup> Although it had been suggested that primigravida women were predisposed to be affected, the

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sequence of gravidity had no influence on the involvement of the disorder. However, pre-eclampsia was six times more prevalent in pregnant women with Bell's palsy than in normal pregnant women.<sup>(19)</sup> In our study, primigravid pregnant women were more likely to be found. Increments of extracellular fluid that can cause interstitial edema of facial nerves and alteration of the immune mechanism that causes reactivation of latent viral infections may be the pathogenetic mechanism.<sup>(18-19)</sup>

There were 17 cases of recurrent facial palsy. Both sides of the face can be affected equally during recurrences. Most cases had their recurrent attack more than one year after the first attack. The rate of recurrence had been reported to be 0.5-10.4% in some studies.<sup>(7-8,20-21)</sup> Higher incidence of recurrence had been found in western population studies.<sup>(8)</sup> Because of the small number of recurrent cases associated with diabetes mellitus, hypertension and other diseases (4 cases), further analysis was not done. It was found that patients with Bell's palsy and diabetes mellitus were 2.5 time more likely to experience a recurrent attack than those without diabetes mellitus.<sup>(21)</sup>

## Summary

Bell's palsy is the most common cause of facial palsy in medical practice. It can affect anyone without sexual and age predominance. Both sides of the face can be equally involved. Associations with diabetes mellitus, hypertension and pregnancy can be found. Recurrence is not exceptional. To study the true nature of the disorder in Thai population, a multi-center, cooperative and more intensive study should be done, especially in population-base pattern.

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