

The impact of seasonal changes on Bell's palsy in Iraqi patients

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Abstract

Background: As idiopathic facial nerve paralysis (Bell's palsy) is thought to be related to cold weather. This is a prospective study done in Al-Najaf city, Iraq to evaluate the relationship between the season's changes and Bell's palsy. **Methods:** A total of 101 patients who presented with facial paralysis at the outpatients clinic of the Middle Euphrates Neurosciences Center between January 2019 and December 2019. The age, gender, side of palsy, month and season in which the facial paralysis was seen were evaluated. **Results:** The patients with Bell's palsy comprised 51(50.5%) females and 50(49.5%) males with a mean age of 35.6±20.1 years. Right side palsy seen in 56(55.4%) of patients. There was an increase in cases during winter but the probability of occurrence was equal for four seasons. **Conclusion:** Based on this study in Najaf, Iraq, the relationship of Bell's palsy with season remains uncertain.

Keywords: Facial paralysis, seasonal changes, Bell's palsy, cold weather

INTRODUCTION

Facial paralysis is a complete or partial function loss in the mimetic muscles of the face related to the damage in the motor fibers of the facial nerve.¹ The majority of facial paralysis cases are of the peripheral type, and the most common cause is Bell's palsy.^{2,3} Peripheral facial nerve palsy is the most common functional disturbance of the cranial nerve⁴, and account for 60–75% of cases. The incidence may be higher in those 15 to 45 years old, those with diabetes, upper respiratory ailments, or compromised immune systems; or during pregnancy and lower in children.^{5,6} Idiopathic facial nerve palsy (Bell's palsy) usually manifests as sudden weakness of the muscles of facial expression on one side of the face.⁴ The symptoms of Bell's palsy can vary from person to person and range in severity from mild weakness to total paralysis.⁷ The pathophysiology of facial nerve palsy involve the reactivation of herpes simplex virus infection (HSV type I) or else a cell-mediated autoimmune inflammatory response.⁴ Based on these pathogenesis, the incidence should be lower in places with hot climates. However, studies of incidence conducted

in cities of the Mediterranean region have shown no significantly lower incidence of Bell's palsy as compared to cities in other colder climates. Nevertheless, even in temperate climate region, Bell's palsy has been reported to be seen more frequently in the coldest seasons.^{2,6} The aim of this study was to evaluate the relationship between the season and the occurrences of Bell's palsy in Al-Najaf, Iraq.

METHODS

This prospective study was based on patients who presented with facial paralysis at the outpatients clinic between January 2019 and December 2019 in Middle Euphrates Neurosciences Center (MENC), Al-Najaf. A total of 101 patients were diagnosed as Bell's palsy, with no specific etiological factor identified. The following patients were excluded from the study: chronic otitis media, bilateral facial paralysis, traumatic facial paralysis, parotid mass or lumps, after surgery, acoustic neuroma. The patients' distribution patterns by age, gender, side of palsy, diabetic history, season and month were recorded.

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Date of Submission: 14 December 2020; Date of Acceptance: 24 December 2020

Table 1: Demographic characters of studied patients

Variables		No.	%	P value
Age	<18 years	25	24.8	0.014
	18-39 years	32	31.7	
	40-59 years	32	31.7	
	≥60 years	12	11.9	
Gender	Female	51	50.5	0.92
	Male	50	49.5	
Side of palsy	Left	45	44.6	0.0001*
	Right	56	55.4	

Statistical analysis

Data were entered onto SPSS 23 for statistical analysis. One sample chi-square test was used to measure the probability of occurrences of bell's palsy related to age groups, gender and season with the assumed equal distribution of cases over the year (null hypothesis).

RESULTS

There were 101 patients with Bell's palsy identified during the study period. The mean age was 35.6 ± 20.1 years, ranging between 2-75 years. The majority of patients were between ages of 18-59 years ($P=0.014$). There was no significant difference according to gender ($P=0.92$). The

occurrence of Bell's palsy was significantly higher in the right side (55.4%) as compared to the left (44.6%) ($P=0.0001$), (Table 1). As for history of diabetic mellitus (DM), 22(21.8%) patients had DM and 79(88.2%) were non-diabetic.

The seasonal distribution of patients with Bell's palsy was 31.7% in winter, 26.7% of patients in spring, 15.8% of patients in summer and 25.7% of patients in fall. The probability of Bell's palsy occurrence was equal through the four seasons ($\chi^2 = 5.33$, $df=3$, $P=0.149$), (Figure 1).

DISCUSSION

The facial nerve is a fundamental structure both for communication, emotion, and functional

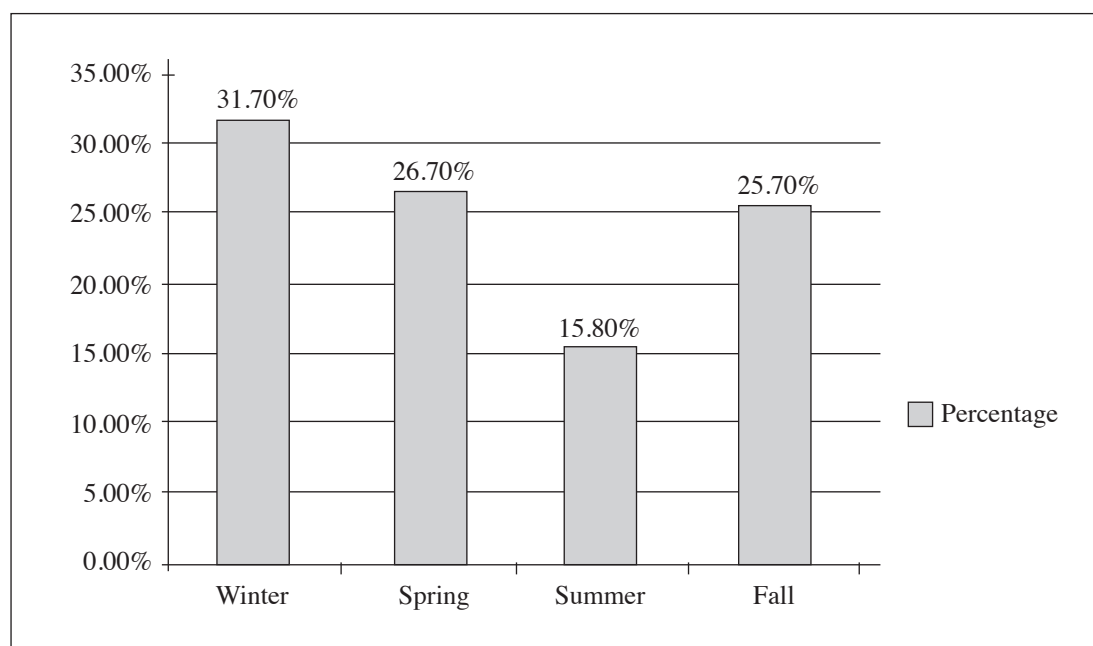


Figure 1. Seasonal distribution of studied patients

impairment can lead to a significant deterioration in the quality of life.⁸ The incidence of Bell's palsy vary in different country. The annual incidence of Bell's palsy in the United States is approximately 23 cases per 100.000 persons, and in the United Kingdom 20 cases per 100.000 persons.⁹ The number of Bell's palsy patients which have been recorded in this study did not reflect the actual number of the cases in our locality as probably many patients did not consult doctors because of mild symptom, some old religious belief, and a number of patients were seen by general physicians or non-neurologist, thus not captured in this study.

In this study the age distributions has shown that most are in adulthood, rather than younger or elderly population. This is similar to several other studies that suggested the Bell's palsy is more common among young and middle-aged adults.^{10,11} This study found similar rates of occurrence between males and females, this is also similar to many other study.^{12,13} However, there is also report of slightly higher incidence of Bell's palsy among females as compared to males.¹⁰

In general, the left and right sides of the face are involved with equal frequency although this and other study has shown right side being affected more often.¹⁴

The findings of the studies investigating seasonal variation of Bell's palsy are not consistent.⁹ In the current study the probability of Bell's palsy occurrence was equal through the four seasons, but the majority of occurrence was in winter. This differs from the report by Spengos *et al.*, who found a significant variation with lower rate during the summer and an increase during the colder period.¹⁵ Hsieh *et al* from Taiwan also found a significantly increased incidence during the cold seasons.⁹ A study by Al-Ghamdi *et al.*, in Asir region, Saudi Arabia similarly found the peak frequency of the paralysis was in the cold months from November to March.¹⁶ However, whether in temperate or cold climates, there is an increase in Bell's palsy in the coldest months of the region, and the discrepancies in the various studies may be due to the geographic and climatic details of the study area.¹⁷ The relationship of Bell's palsy with the seasons remains uncertain.¹⁷

In conclusion, this study from Najaf, Iraq did not show a significant variation of the frequency of Bell's palsy with seasons, although there is higher number of cases during the coldest months of the year.

DISCLOSURE

Financial support: None

Conflict of interest: None

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