



# Asian Over-Representation Among Patients with Hemifacial Spasm

Yuncheng Wu MD, PhD<sup>1,2,3</sup>, Anthony L. Davidson BS<sup>2</sup>, Tianhong Pan MD, PhD<sup>3</sup>, Joseph Jankovic MD<sup>2\*</sup>  
<sup>1</sup>Department of Neurology, Shanghai First People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, P.R. China  
<sup>2</sup>Parkinson's Disease Center and Movement Disorder Clinic, Department of Neurology, Baylor College of Medicine, Houston, Texas, USA  
<sup>3</sup>Parkinson's Disease Research Laboratory, Department of Neurology, Baylor College of Medicine, Houston, Texas, USA  
 \*corresponding author



## ABSTRACT

Hemifacial spasm (HFS) is a common movement disorder, but its prevalence in different populations has not been elucidated. A retrospective review of all patients with HFS currently followed at the Baylor College of Medicine Movement Disorders Clinic and compare their demographic and clinical data with a control group of patients with cranial-cervical dystonia (CD). In contrast to patients with CD (N=145, mean age 48.64±13.61 years), of whom 117 (80.69%) were Caucasians, 13 (8.97%) Hispanic, 10 (6.90%) African-American, and 5 (3.45%) were of Asian origin, there were 81 (61.36%) Caucasians, 24 (18.18 %) Hispanic, 13 (9.85 %) African-Americans, and 14 (10.61%) Asians in the HFS group (N=132, mean age 49.33±13.25). Although there was no statistical difference in the age and gender distribution between the two groups, the frequency of Asians in HFS group was 3.1 times higher than that in CD group (P < 0.01). Furthermore, the prevalence of Asians among patients with HFS was nearly twice the estimated prevalence of Asians in general Houston population (5.48%). Our results support the observation that HFS is much more common in the Asian population than in other populations. Further epidemiological, genetic, imaging and anatomic studies are needed to understand the apparent difference in the prevalence of this peripherally induced movement disorder.

## BACKGROUND

Hemifacial Spasm (HFS), first described by Gowers in 1884, is the most common peripherally induced movement disorder. It is characterized by involuntary, unilateral, intermittent, irregular, tonic or clonic contractions involving the upper and lower facial muscles (Jankovic, 2009; Wang and Jankovic, 1998). Primary HFS is commonly attributed to vascular loops compressing the seventh cranial nerve at its exit zone from the brainstem (Jankovic, 2009). The facial nerve compression is thought to lead to ephaptic transmission and hyperactivity of the facial nucleus, resulting in the involuntary facial movements (Krishnan, 2007; Nielsen, 1984).

Few epidemiological studies have estimated the prevalence of HFS (Auger and Whisnant, 1990; Nilsen et al, 2004), but based on observation in movement disorders clinics HFS appears relatively much more common in Asian populations (Jankovic, 2009; Tan and Chan, 2004). To investigate the relative prevalence of HFS in different populations, we compared the ethnic/racial backgrounds of unselected patients with HFS with those in patients diagnosed with cranial-cervical dystonia (CD) (Fabbrini et al, 2009) attending our movement disorders clinic.

## PATIENTS and METHODS

We reviewed all medical records of patients evaluated at Baylor College of Medicine Movement Disorders Clinic between January 1, 2009 and December 31, 2009 and identified 277 patients with HFS or CD. Demographic and clinical characteristics were compared among Caucasian, African-American, Hispanic and Asian patients using T-Test (age) and Chi-squared test (gender). Mantel-Haenszel Chi Square test was used to analyze the ethnic/racial distribution of HFS and CD in the various populations. All analyses were performed using SAS 6.22.

## RESULTS

The main demographic features of both groups (HFS and CD) are presented in Table 1. Of the HFS (N=132, male/female=50/82, mean age 49.33±13.25 years) patients, 61.36% were Caucasians, 9.85% were African-American, 18.18% were Hispanic, and 10.61% were of Asian origin while the relative frequencies of the CD (N=145, male/female=46/99, mean age 48.64±13.61 years) patients were as follows: 80.69% Caucasians, 6.90% African-American, 8.97% Hispanic, and 3.45% Asians. There is significant difference in ethnic/racial distribution between two groups (P=0.0008), but there was no significant difference in the age or gender.

**TABLE 1.** Demographic and Race/Ethnicity characteristics of Hemifacial Spasm and Cranial Dystonia patients in BCM Movement Disorders Clinic (January 1, 2009 to December 31, 2009)

	Hemifacial Spasm (HFS)	Cranial Dystonia (CD)	P
Demographics			
Mean age (SD)	49.33 (13.25)	48.64 (13.61)	>0.05
Female (%)	82 (62.12%)	99 (68.28%)	>0.05
Race/Ethnicity			
Caucasian	81 (61.36 %)	117 (80.69 %)	<0.001
Hispanic	24 (18.18 %)	13 (8.97 %)	
African-American	13 (9.85 %)	10 (6.90 %)	
Asian	14 (10.61 %)	5 (3.45 %)	

The ethnicity difference in two groups, Mantel-Haenszel Chi Square test: Chi Value=11.14, P=0.0008

The frequency of Asians in HFS group (10.61 %) is 3.1 times higher than that in the CD group (3.45%) (Fig 1) and nearly twice times higher than the frequency of Asians in the general Houston population (Asians/total by race in Houston=110,850/2,023,601, 5.48%).

The Frequency of different ethnicity in HFS and CD patients in Movement Disorder Clinic

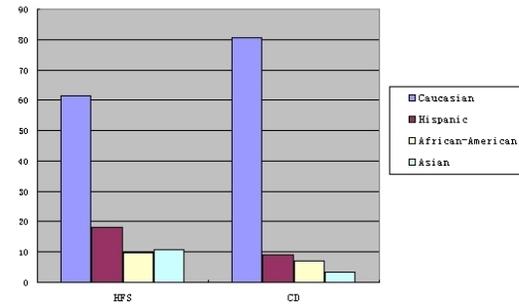


Figure 1. The frequency of different ethnicity in HFS and CD patients in Movement Disorders Clinic in Baylor College of Medicine.

Based on the ethnic/racial distribution data of Houston, the prevalence of Asians in HFS group (12.63 per 100,000) is 2.8 times higher than that in CD group (4.51 per 100,000) (P<0.05) (Table 2). Furthermore, the prevalence of Asians in HFS group is significantly higher than its prevalence among Hispanic (P<0.01), African-American (P<0.01) and Caucasian (P<0.05) populations.

**TABLE 2.** The prevalence of Hemifacial Spasm and Cranial Dystonia in different Race/Ethnicity in Houston.

	Population number	HFS prevalence (per 100,000)	CD prevalence (per 100,000)
Caucasian	1,125,647	7.20	10.39
Hispanic	865,085	2.77	1.50
African-American	478,336	2.72	2.09
Asian	110,850	12.63	4.51

Race/Ethnicity detail for City of Houston as taken from the American Community Survey Estimate for the year 2008.

## CONCLUSIONS

- \* In this study data from patients with HFS and CD, similar as 9.4% in the previous studies, the frequency (10.61%) of Asians in HFS is higher than its in CD groups (3.45%) and Houston populations (5.48%).
- \* Based on the ethnicity distribution data of Houston, we can find that the prevalence of Asians in HFS group (12.63 per 100,000) is 2.8 times higher than that in CD group (4.51 per 100,000) (P<0.05) (Table 2). And also, the prevalence of Asians in HFS group is significantly higher than its prevalence of Hispanic (P<0.01), African-American (P<0.01) and Caucasian (P<0.05).
- \* Our results support the observation that HFS is much more common in the Asian population than other populations. Further epidemiological, genetic, imaging and anatomic studies are needed to understand the apparent difference in the of this peripherally induced movement disorder.

## REFERENCES

- Auger RG, et al. Arch Neurol. 1990;47(11):1233-4.  
 Fabbrini G, et al. Nat Clin Pract Neurol. 2009;5(2):93-105.  
 Fabbrini G, et al. Neurology. 2009;73(13):1054-7.  
 Felicio AC, et al. Arq Neuropsiquiatr. 2007;65(3B):783-6.  
 Jankovic J. Neurol Clin. 2009;27:821-32.  
 Kamiguchi H, et al. J Neurol Neurosurg Psychiatry. 1997;62(5):532-4.  
 Krishnan AV, et al. Neurology. 1984;34:418-426.  
 Nilsen B, et al. Neurology. 2004;63(8):1532-3.  
 Pongvarin N, et al. J Med Assoc Thai 1995;78:281-8.  
 Tan EK, et al. J Neurol Sci. 2004;222(1-2):59-64.  
 Tan EK, et al. Mov Disord. 2000;15:363-5.  
 Tan EK, et al. Parkinsonism Relat Disord. 2005;11(4):241-5.  
 Wang A, et al. Muscle Nerve. 1998;21:1740-1747.

## ACKNOWLEDGEMENT

This work was supported by Diana Helis Henry Medical Research Foundation (2007-2010) and Carolyn Weiss Law seed funding, partially supported by NIH of the Clinical Center for the Study of Neuroprotection from PD (5U10NS04441-07).

We also thank the National Parkinson Foundation of their support of the NPF Center of Excellence at Baylor College of Medicine.

We are also thankful Rupesh Koshy for providing ethnic/race data for City of Houston as taken from the American Community Survey Estimate for the year 2008.