

Ethnicity, Cerebrovascular Diseases and Atherosclerosis-Related Syndromes and Phenomena in Northern Israel

Gregory Telman*

Department of Neurology, Faculty of Medicine, Rambam Health Care Campus and Technion, Haifa, Israel

Description

Rambam Health Care Campus is the largest tertiary hospital in the northern Israel, serving population of more than two million, and is the tertiary referral center for other regional hospitals. The population of northern Israel is mainly bi-ethnic with almost equal Jewish and Arab population and minimal mingling between these two ethnic groups.

During last year, we conducted a number of retrospective hospital-based studies on cerebrovascular patients, mainly acute ischemic stroke and transient ischemic attack (TIA) patients, looking at ethnicity as possible predictor for different atherosclerosis-related syndromes and phenomena, when the variation of routine vascular risk factors was also taken into consideration. The aim of this short communication is to show the importance of ethnicity as well as other demographic parameters, vascular diseases and routine vascular risk factors in variety of cerebrovascular diseases and atherosclerosis-related syndromes and phenomena in bi-ethnic population of northern Israel. Assignment of ethnicity in all studies was done by first and last name along with a place of residence and place of birth. This method of ethnic background determination was previously examined with almost perfect correlation between the four independent observers, $K=0.96$, according to Fleiss' Kappa [1].

The profile of vascular diseases and vascular risk factors in Arab and Jewish patients with acute ischemic stroke and acute intracerebral hemorrhage (ICH) is presented in Table 1. Diabetes mellitus was the only vascular risk factors occurring significantly more often in the stroke and ICH patients of Arab origin. The examined atherosclerosis-related syndromes and phenomena included carotid plaques presence, carotid intima-media thickness, distribution of aortic atheromas, intracranial stenosis and cerebrovascular resistance as evaluated by pulsatility index (PI).

The factor of ethnicity was significant only in patients with acute ischemic stroke and aortic atheromas, when patients of Jewish origin were significantly more prone to develop aortic atheromas. For other atherosclerosis-related syndromes and markers, biologic parameters

and routine vascular risk factors, but not ethnicity, were found to be significant predictors in acute ischemic stroke and TIA patients in northern Israel (Table 2).

Discussion

Ethnic /race differences are well established in many nosologies and many populations [2-5]. Stroke and other cerebrovascular diseases are influenced by ethnicity in many aspects. Extensive literature data may be found about the relation between race/ethnicity and distribution of vascular risk factors [6-8] as well as between race/ethnicity and many clinical variables, such as disease prevalence, clinical course, complications, outcome and mortality [9-12]. The bi-ethnic character of the northern Israel population gives an opportunity to study the possible influence of ethnicity on different nosologies. This was never done before about cerebrovascular patients. We found considerable similarity in distribution of routine vascular risk factors in acute ischemic stroke and ICH patients of Jewish and Arab origin [13,14], when the only significant difference was a higher prevalence of diabetes in patients of Arab origin. The higher prevalence of diabetes in minorities stroke patients was found in another Israeli study [15] as well as in other populations [16-18]. This phenomenon is explained by both genetic and cultural mechanisms.

On the other hand, an influence of ethnicity on examining atherosclerosis-related phenomena and syndromes in our population was limited [19]. From five examined syndromes, four-intracranial stenosis [20], presence of carotid plaques [21], carotid intima-media thickness and cerebrovascular resistance (submitted data)-were influenced only by biological factors (age and gender) or vascular risk factors. The retrospective nature of the studies included in this report should be mentioned as a limitation, which is partially overwhelmed by a large sample size and carefully performed studies protocols.

In conclusion, in stroke and TIA patients of northern Israel many atherosclerosis-related phenomena and syndromes are influenced mainly by biological and routine vascular risk factors, when the influence of ethnicity is limited. Further studies should concentrate on differences between these two groups in income, management of hypertension and diabetes, marital state, administrative support, medical counseling, nutrition, physical activity and many other factors in attempt to explain peculiarities of cerebrovascular diseases and

Risk Factor	Acute Intracerebral Hemorrhage		P	Acute Ischemic Stroke		P
	Jewish patients (N=417)	Arab patients (N=129)		Jewish patients (N=499)	Arab patients (N=228)	
Hypertension	302 (72.6%)	91 (70.5%)	NS	294 (58.9%)	136 (59.7%)	NS
Diabetes	86 (20.6%)	48 (37.2%)	0.0002	149 (29.9%)	110 (48.3%)	<0.0001
Hyperlipidemia	132 (31.7%)	36 (27.9%)	NS	192 (38.5%)	76 (33.3%)	NS
Smoking	48 (11.5%)	25 (19.5%)	0.025	148 (30%)	64 (28.1%)	NS
Ischemic heart disease	106 (25.5%)	24 (18.8%)	NS	91(18.2 %)	54(23.7%)	0.01
Atrial fibrillation	76 (18.3%)	16 (12.4%)	NS	34 (6.8%)	16 (7%)	NS

Table 1: Comparison of risk factors profile in Arab and Jewish patients with ICH and ischemic stroke.

*Corresponding author: Gregory Telman, Department of Neurology, Rambam Health Care Campus and Technion Faculty of Medicine, Haifa, Israel, Tel: +972 4 8542161; E-mail: g_telman@rambam.health.gov.il

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Syndrome Risk factor	Intracranial stenosis (Acute ischemic stroke and TIA N=1344), P	Aortic atheromas (Acute ischemic stroke, N=509), P	Carotid disease (Acute ischemic stroke N=1378), P	Intima-Media Thickness (Acute ischemic stroke and TIA, N=777), P	Cerebro-vascular resistance by PI* (Acute ischemic stroke and TIA, N=862), P
Ethnicity Arab vs. Jewish)	NS	0.02	NS	NS	NS
Age (per year)	NS	0.0002	<0.0001	<.0001	<.0001
Gender (male vs. female)	NS	NS	0.002	0.0005	NS
Hypertension	NS	NS	NS	<.0001	NS
Diabetes	0.0016	NS	0.049	<.0001	<.0001
Smoking	NS	0.0003	0.04	NS	NS
Hyperlipidemia	NS	NS	0.049	NS	NS
Ischemic Heart Disease	NS	NS	NS	NS	NS
Peripheral Vascular Disease	0.0097	NS	NS	0.0065	NS

* Pulsatility Index

Table 2: Logistic regression analysis of possible predictors of atherosclerosis-related syndromes and phenomena in acute ischemic stroke and TIA patients in bi-ethnic population of northern Israel.

atherosclerosis-related phenomena in bi-ethnic population of northern Israel.

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