BASILINE CHARACTERISTICS AND LONG TERM OUTCOME OF ESUS IN A HOSPITAL-BASED POPULATION

M. Riolo, V. Arnao, F. Favitta, G. Smorlesi, B. Fierro, P. Ragonese and P. Aridon

Department of Experimental Biomedicine and Clinical Neurosciences, University of Palermo, Italy

Contacts: riolomarianna@gmail.com; paolo.aridon@unipa.it

Background and aims: The construct of Embolic Stroke of Undetermined Source (ESUS) was created in order to distinguish, among the cryptogenic strokes, those who might have an embolic origin. We evaluate the percentage of ESUS in a hospital-based cohort, describing both characteristics at baseline and the follow-up.

Methods: A retrospective analysis was performed on consecutive patients admitted to our Neurology Department (from January 2010 to December 2015) with an ischemic stroke (IS), selecting those who fulfilled ESUS criteria. Patients were evaluated at baseline and at follow-up (2017) with a telephonic interview and an outpatient visit. The primary end-point was mortality; the secondary outcomes were TIA/stroke recurrence and functional outcome (mRS). Dead was assessed both by telephone interview and death certificate, while the last were used for the recording of causes of death. Kaplan Meier and multivariate Cox regression models were built to compare survival between IS and ESUS patients.

Results: Of 750 patients admitted to our ward with IS, 177 met ESUS criteria. The mean age of ESUS patients (69,01; SD:13.2) was lower than IS group (73,8 SD: 13,6). Despite frequency of death in ESUS patients was lower (18% vs 30%), mean survival was significantly lower (401 vs 502; $p=0.001$), above all for women in the early phase after the event. Cox regression showed that NIHSS and increasing age were the most relevant predictors for the risk of death, independently from stroke subtypes (IS vs ESUS). In both groups, the portion of deaths due to cerebrovascular disease is similar. As far as follow-up is concerned, in ESUS patients alive, stroke/TIA recurred in 21% and 2,8% of them developed atrial fibrillation (AF).

DESCRIPTIVE ANALYSIS

PARAMETERS	ESUS (n=177)	IS (n=573)
Demographics		
Female sex	83	281
Age, y	69,01 (20-92)	73,8 (25-99)
Risk factors		
Hypertension	128	445
Diabetes mellitus	61	189
Smoking (current or former)	85	261
Previous cerebrovascular event	26	144
Previous coronary artery disease	32	112
Dyslipidaemia	105	359
Heart failure	8	42
Alcohol intake	52	171
NIHSS score, median	7 (SD: 4,73)	8,42 (SD: 5,46)

MAIN FEATURES OF PATIENTS DEAD IN BOTH GROUPS

	TOTAL		MALE		FEMALE	
	IS	ESUS	IS	ESUS	IS	ESUS
Dead	177	31	78	11	99	20
Age at death (mean)	81,2	76,8	78,9	71,1	82,9	79,6
Age at death (median)	82	79	81	74	83	81
Survival (days) (mean)	502	401	494	511	509	340
Survival (days) (median)	251	203	246	410	258	140
NIHSS (mean)	11,1	10,1	9,4	8,6	12,3	11
NIHSS (median)	11	10	10	9	12	10,5

CAUSES OF DEATH

Conclusions

In our cohort, nearly 25% of patients met ESUS criteria. They presented with typical vascular risk factors, as IS patients; the only exception was that ESUS patients were younger and had less severe strokes. As far as mortality is concerned, when compared with IS, ESUS patients present a higher risk of death, above all in women in the early period after the event (leading to a lower early survival). This might be a consequence of both age at the event and clinical severity. In conclusion, embolic stroke might make the patients more sensitive to other fatal events, even when their source is unknown and they are not lethal.

References

- Hart RG, Diener HC, Coutts SB, et al. Embolic strokes of undetermined source: the case for a new clinical construct. *Lancet Neurol* 2014; 13:429.
- Ntaios G, et al. Embolic Strokes of Undetermined Source in the Athens Stroke Registry: An Outcome Analysis. *Stroke*. 2015;46:2087-93
- Perera KS, et al; ESUS Global Registry Investigators. Embolic strokes of undetermined source: prevalence and patient features in the ESUS Global Registry. *Int J Stroke*. 2016;11:526-533.