# INCIDENCE TREND OF JUVENILE STROKE IN THE PROVINCE OF FERRARA, ITALY, 2003-2015

I Casetta[1], M Chiavilli[1], M Padroni[1], C Azzini[2], A De Vito[2], N Napoli[3], F Guerzoni[3], E Granieri[1].

*[1] Clinica Neurologica, Università degli Studi di Ferrara, Ferrara*
*[2]Stroke Unit, U.O. di Neurologia, Azienda Ospedaliero-Universitaria Sant'Anna, Ferrara*
*[3]Azienda Ospedaliero-Universitaria S. Anna Ferrara*

## Background and Objectives:

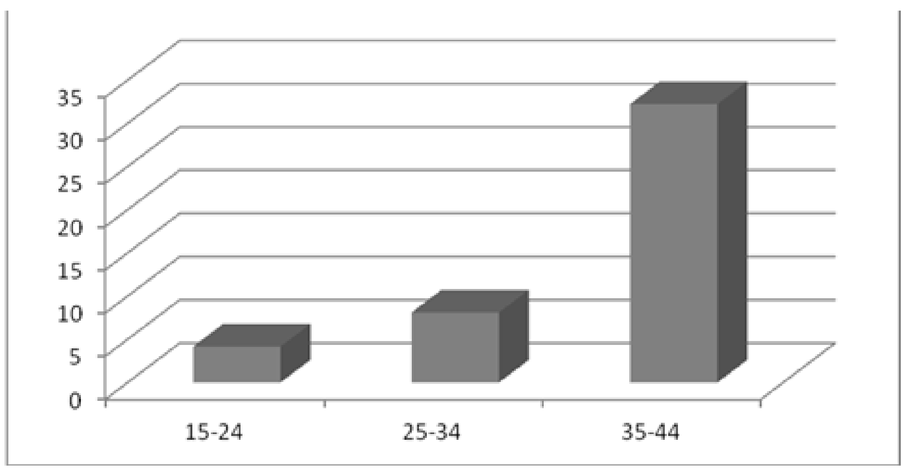
Stroke is the third leading cause of death in western countries and one of the  a major causes of morbidity and years of productive life lost, above all when occurring  in young people (1). Recent studies have suggested an increasing temporal tend in incidence of stroke in people aged 15-44 years (2,3) and a similar trend in hospitalization for stroke in children and young adults. We sought to estimate the incidence of first-ever stroke in subjects aged 15-44 years in a well- defined area of northern Italy over the period 2003-2015.

## Methods :

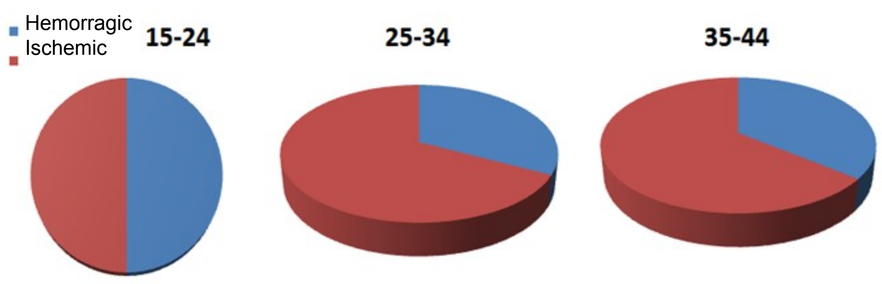
The study was carried out in the province of Ferrara,  covering a flat area of 2.635,12 square kilometers in northeastern Italy . The total population  on January 1, 2015 was 354.073 inhabitants. In the considered age range ( 15-44 years) the mean population was 122,649 people, 62,277 men, and 60,372 women. We sought to implement a registry of juvenile first-ever in-a-lifetime stroke (4) by using multiple overlapping sources of case collection to identify all fatal and non-fatal stroke in hospitalised and non-hospitalised patients. Patients with first-ever stroke were classified as cerebral infarction, intracerebral hemorrhage (ICH) or subarachnoid hemorrhage (SAH). Temporal changes in incidence rate were evaluated by calculating the annual percentage change (APC) and the corresponding 95% confidence interval (CI).

## Results:

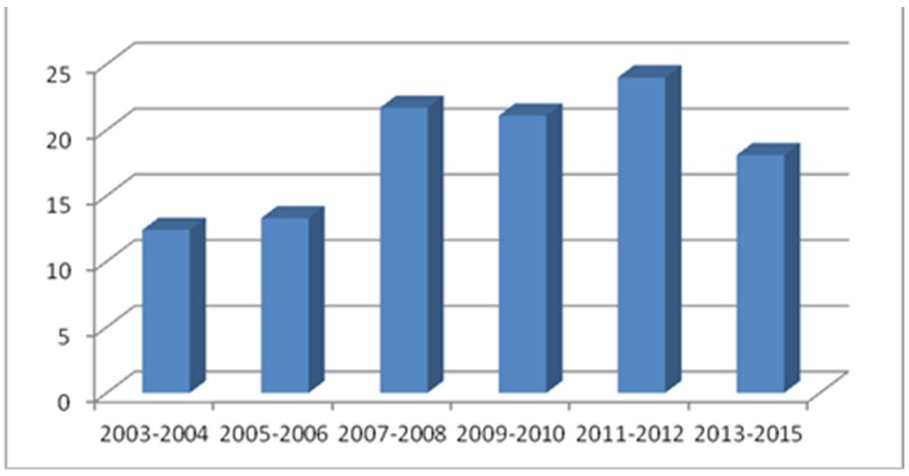
During the surveillance period, a first-ever stroke was diagnosed in 292 patients, 144 men and 148 women, giving a mean annual crude incidence rate of  18.3 cases per 100,000 person-years (95% CI  16.3-20.5),  17.78 ( 95% CI 15-20.9) for men and 18.85 ( 955 CI 15.9-22.1) for women, a nonsignificant difference. Age-specific rates increase from 4.2 per 100,000 person-years in the age group 15-24, to 32.2 per 100,000 person-years in the age group 35-44.




The incidence rate was 11.7 ( 95% CI 10.1-13.6) for CI, 3.76 ( 95% CI 2.8-4.8) for ICH, and 2.82 ( 95% CI 2-3.7) for SAH. The percentage of ICH was 50% in the age group 15-24 and it was about one third  in the other age groups.




We found an increasing temporal trend over the study period with an annual percent change of 13.4% ( p < 0.001). The incidence tends to increase until 2011-2012, and then it tends to stabilize/decrease. This trend was similar between the two sexes and was confirmed only for CI in the age groups 35-44.




The 30-day Case Fatality  Rate was 6.1% (18/292), 2.1%  (4/187) for ischemic stroke, 15%  (9/60) for ICH and 11.1% for SAH (5/45). The difference between ischemic and hemorragic stroke was statistically significant (Chi square= 12.7  p< 0.001).

## Conclusions:

Multiple factors could account for the increased incidence of CI young adults including changes in vascular risk factors. Better awareness and prevention could explain the observed initial decline in incidence observed in the last years of the study periods. Stroke prevention should be further encouraged even in young people.

## References:

1.Feigin VL et al. Global and regional burden of stroke during 1990-2010: findings from the Global Burden of Disease Study 2010. Lancet. 2014;383:245-54.
2.Kissela BM et al. Age at stroke. Temporal trends in stroke incidence in a large, biracial population. Neurology 2012;79:1781–1787.
3.Bejot Y et al. Trends in the incidence of ischaemic stroke in young adults between 1985 and 2011: the Dijon Stroke Registry. J Neurol Neurosurg Psychiatry 2014;8:509–51.
4.Groppo E et al. Incidence and prognosis of stroke in young adults: a population-based study in Ferrara, Italy. Neurol Sci. 2012;33:53-8.

Sin
XLVII CONGRESSO NAZIONALE
22-25 OTTOBRE 2016 – VENEZIA
WebPoster