Profiles and Pitfalls in the Stroke Care Chain:

Population and Doctors Counterparts

Abstract

Introduction: The high stroke incidence and the likelihood of long lasting disability added to a high mortality rate can be improved either by an early prevention or the effective treatment actually available. Both rely heavily on population awareness of stroke risk factors, warning symptoms/signs and emergent action. However, recent studies report that knowledge is poor, even in those at high risk, and patients frequently seek the general practitioner (GP) instead of dialling the emergency number or going straight to hospital. If so GP diagnosis and referral practices acquire a decisive importance in the acute stroke care chain. A community based project was then set up for analysing the stroke care chain and disclosing population and GP pitfalls.

Methods: During a 4-month period in the first semester 2007, 3 studies were undertaken in rural (Arcos de Valdevez and Ponte da Barca) and urban (Ponte de Lima) populations from the Viana do Castelo district: a population survey on stroke knowledge, a collection of case scenarios for studying GP diagnosis accuracy and an incidence study of stroke and transient ischemic attack (TIA). About 1% of all persons registered at the HCs answered a questionnaire designed for knowing about population awareness of stroke risk factors, lesion location, characteristic symptoms/signs and respective action. All GPs (n=68) working in the 3communiti received a questionnaire comprising 16 "real" case scenarios and were asked to indicate the most likely diagnosis among four options: stroke, TIA, other transient focal signs/symptoms or other neurological disease, as well as name the major reasons for choosing the specific option. Throughout the same period, all GPs were asked to identify patients with a stroke or TIA by filling a questionnaire with patient's socio-demographic characteristics, place and date for the identification and details of the event. For complete ascertainment of cases routine information from hospital admissions (either in the emergency department or medical unit) and death certificates were checked. By linking patient's action in case of specific stroke symptoms/signs, GP accuracy in diagnosing these specific cases and their referral practice, it was possible to depict the patient pathway within the NHS, namely the "entrance door" and the GPs role in this pathway.

Results: A total of 663 persons answered the questionnaire, 316 from rural and 347 from urban areas. Knowledge of stroke risk factors was similar in both settings, as well as the number of stroke symptoms identified, despite rural populations being older and less educated than the urban ones. The rural/urban contrast emerged in intention of action in case of stroke, 51.6% and 75.0% would dial the emergency number/go to hospital, respectively. Action was modelled by age/education, residential area and specific stroke warning symptoms/signs; the youngest

were twice more likely to act well and urban residents were 3 times more likely to act well. Half of GPs participated in the case scenarios study, although only 31 (45.6%) completed all 16 case scenarios. Using as golden standard the diagnosis made by a group of 10 neurologists (unanimity/majority), GP sensitivity was 79.6% (95% CI: 74.4-84.8) and specificity was 82.5% (95% CI: 76.0-89.9), attaining the highest values in typical stroke cases describing old patients with vascular risk factors and presenting weakness in the hemibody/hemiparesis and anosognosia, and the lowest in cases describing less old patients (<60 years of age) presenting only visual or speech abnormalities, more frequently TIAs.

Stroke incidence was 3.50 per 1000 person-years and 50% of death certificates stated inaccurately stroke as cause of death. Patients residing in rural areas sought more frequently first help from the GP in case of stroke or TIA (41.7 vs. 7.3%). Overall GPs referral rate was 81.8% increasing to 92.6% in confirmed stroke/TIA patients. Based on the population intended action and GPs accuracy/ management according to stroke warning symptoms/signs, it was possible to estimate the pitfalls in the acute stroke care chain. In case of the most important well recognized stroke symptoms/signs (hemiparesis/weakness in the hemibody) the system pitfalls result mainly from population misrecognition rather than GPs (28.8% vs. 2.6%). For less acknowledged symptoms/signs as speech problems, GPs misdiagnosis play a more important part, since 21.5-24.3% of cases would be inadequately cared and 25.6% would be misrecognized by the population. For other symptoms/signs these proportions are 21.5 and 35.0%, respectively.

Conclusion: Since there are no risk factors and/or acknowledged stroke symptoms/signs consistently associated to action, it seems that the correct action may be attributed to "seriousness" of specific symptoms independently of its relation with stroke, or to other external factors as accessibility of health services.

To shorten acute stroke care chain, it is crucial to show people that recent treatment options are available and they may benefit from seeking timely hospital services. Moreover, GPs should be trained to identify and to refer emergent situations of stroke/TIA, since they are still an important link in the acute stroke care chain.