EMS to PSC: Barriers for stroke patients

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A 55 year old man is found slumped over in his car at a job site parking area at 1:30pm. EMS is dispatched and transfers the patient to the ED at 2:00pm. In the ED, he was found to have a massive left hemispheric ischemic stroke and is aphasic. His wife said he left for work at 7am that morning as normal, and she had a clear and normal cell phone conversation with him at 12:30pm. At 1:00pm a co-worker stated the man said he wasn’t feeling well and was going to his car to rest. At the time the co-worker noticed his speech was slurred and his face looked “funny”.
Case 1

- What do you think I’m trying to emphasize in this case?
- What would you use as the last known well time?
TIME. The gold standard and FDA approved treatment tPA works best the sooner that it is given and the current guidelines are to give it within 3 hours of symptom onset. That is why determining the last known well time is so important. EMS is sometimes our only link to gathering this crucial piece of information, particularly if the patient is confused, aphasic or if family/bystanders are not present to provide information.
Case 2

- An 85 year old female is brought to the ED with weakness. EMS transferred the patient from a local nursing home to the emergency department. En route, EMS calls report to the ED that they are bringing in a “another weak old lady”. The ED is extremely busy and the patient’s vital signs were normal so the patient waited approximately 40 minutes before a provider could evaluate the patient. Upon exam, the patient is found to have drift of the right upper and lower extremities. The stroke protocol is initiated, but precious time was lost because a stroke was not identified pre-hospital.
It is important for EMS to identify signs of a stroke and relay the information to the receiving hospital to give them a heads up. This way, the stroke team can be ready to initiate evaluation and activate their stroke protocol immediately when the patient arrives. As in case 1, time is of the essence.
67 year old female with a history of atrial fibrillation presents 45 minutes after the acute onset of left sided weakness. EMS contacted the ED and upon arrival the stroke protocol was initiated. The patient is confused and does not know the medications she’s on. The EMS personnel state that her husband has a list of her medications and will be coming to the ED once he finds a ride. The patient is not found to have any contraindications to tPA and therefore infusion is initiated. The patient becomes comatose and a repeat CT shows a large intracranial hemorrhage. 20 minutes later the husband arrives and the medication list is reviewed. She is on pradaxa.
With many new anticoagulants on the market, it is important to get a complete list of medications.
A loss of blood flow to the brain by a blocked or burst blood vessel
Brain Attack

- Heart attack = Brain attack
- Similar risk factors
- Similar pathophysiology
- Similar time considerations
- Similar treatment options

Time = Tissue
What is happening in the community?

- 51% of patients with stroke arrived at the ED via ambulance, with no significant change between 1997 and 2008
- 32% of patients arrived at the emergency department within 1.5 hours of stroke onset
- 46% arrived within 3 hours
- 61% arrived within 6 hours
- tPA was administered to stroke patients 3.1% overall: 2.2% at non-PSCs and 6.7% at PSCs
Joint Commission Primary Stroke Centers Utilize More rt-PA in the Nationwide Inpatient Sample
Michael T. Mullen, MD†; Scott E. Kasner, MD; Michael J. Kallan, MS; Dawn O. Kleindorfer, MD; Karen C. Albright, DO, MPH; Brendan G. Carr, MD, MS; J Am Heart Assoc. 2013;2:e000071; originally published March 26, 2013

National Trends in Ambulance Use by Patients With Stroke, 1997-2008
Hooman Kamel, MD; Babak B. Navi, MD; Jahan Fahimi, MD, MPH JAMA. 2012;307(10):1026-1028.

Delay in Presentation and Evaluation for Acute Stroke. Stroke Time Registry for Outcomes Knowledge and Epidemiology (S.T.R.O.K.E.)
Clifton R. Lacy, MD; Dong-Churl Suh, MBA, PhD; Maureen Bueno, PhD; John B. Kostis, MD; Stroke. 2001; 32: 63-69
It is important to educate members of the community as well as local EMS providers about signs, symptoms and treatment options for stroke. Delay in presentation to the hospital is the leading reason patients are ineligible for treatment.
Cincinnati Stroke Scale

- F: Face
- A: Arm
- S: Speech
- T: Time
Barriers for Stoke patients

- Open forum for discussion