Case Study: TIA

Clarke Krugman

Old Dominion University

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This paper explores a case study wherein a patient is diagnosed upon admission with a transient ischemic attack, or TIA. Methods of correct history taking, body systems to review, diagnosis, treatment, and follow-up will be exercised. In doing so, the paper will underscore the importance of critical thinking, accurate assessment, gathering of information, and usage of clinical guidelines to direct quality care.

**Background**

 A 78 year old presents having had a weekend episode of sudden-onset, right-sided weakness which resolved in under 2 hours. No medical attention was sought until present time (approximated at 48 hours) because the symptoms had resolved. Past medical history reveals a 64 pack-year history of smoking, ‘mild hypertension’ of 10 years duration, and elevated lipids “a few years back” which is untreated. No current medications are being taken; patient states he takes aspirin on occasion. He discontinued HCTZ 50mg 10 years ago. Patient has no primary care physician and has not received immunizations in a decade.

**First Impressions**

 This patient is at high risk for stroke following what might be a transient ischemic attack, or TIA. Admission to hospital is recommended, hopefully within 24 hours of symptoms. Even if delayed, medical attention should be sought promptly (Johnston et al., 2011). The risk for stroke is as high as 11% within seven days of having a TIA (Nanda, 2011).

**History of Present Illness**

The history of present illness (HPI) is a, “…complete, clear, and chronological account of the problems prompting the patient to seek care” (Bickley, 2013, p. 8). It has specific components which include: principal symptoms, medications, allergies, and tobacco, alcohol, and drug use (Bickley, 2013). The *principal symptoms* are investigated for seven specific attributes, (1) location (on the patient’s body); (2) quality (ex.,sharp, dull, throbbing); (3) quantity or severity; (4) timing, including onset, duration, and frequency; (5) the setting in which it occurs; (6) factors which aggravate or alleviate the symptom; and (7) associated manifestations. Bickley states, “These are invaluable for understanding all patient symptoms” (2013, p. 8). Also included in the HPI are the pertinent positives and pertinent negatives that are revealed in the chief complaint and review of systems (Bickley, 2013).

 Applied to this 78 year old patient, it is known that he is a smoker, and as yet there is an incomplete description of his symptoms, as well as minimal information about alcohol, medications, and allergies. Efforts should be made to obtain the attributes relating to his principal symptoms (numbered 1 through 7 above), a formal review of medications, specifics about allergies, and any use of alcohol or drugs.

**Additional History**

Childhood and adult illnesses are part of good history taking (Bickley, 2013). Adult illnesses for this patient encompass: *Medical*: illnesses such as diabetes, hypertension, asthma, COPD, and hospitalizations, to name several; *Surgical*: including dates and types of operations; and *Psychiatric* (Bickley, 2013).

 Family history should include immediate relatives including parents, grandparents, siblings, children, and grandchildren. Specific to this patient, a family history of known risk factors for stroke should be explored. These are: hypertension, coronary artery disease, hyperlipidemia, stroke, diabetes, and lung disease (Bickley, 2013).

Personal and social history rounds out the patient history by revealing lifestyle patterns, diet and exercise – lifestyle habits that promote good health or present as risk factors (Bickley, 2013).

**Additional Physical Exam/Review of Systems**

 The physical exam will look for specific deficits. This patient experienced right sided weakness, so neuromuscular testing will take place. Also, TIAs can cause vision loss, diplopia, tinnitus, hearing loss and other neuro deficits, so a complete head, eyes, ears, nose, and throat, (HEENT) examination should take place (Nanda, 2011). Cardiovascular system involvement is also suspected in TIA. This can be in the form of atrial fibrillation, carotid stenosis, and vasospasm to name several, so cardiovascular system review will be undertaken (Hachinski & Jain, 2008). Respiratory system will be checked to look for or rule out pulmonary embolism, and potential impact of smoking vis a vis COPD in elevating stroke/TIA risk factors. Diabetes elevates TIA risk, so endocrine system will be reviewed also (Johnston et al., 2011, and Nanda, 2011). The review of systems will produce pertinent positives and negatives. Pertinent positives in this patient are right-sided weakness, hypertension, smoking, and elevated lipids. Upon further diagnostic testing, pertinent negatives will arise which will be used to rule out other possible diagnoses. These have not been observed (yet) but *examples* of significant negatives for the above systems (HEENT, Neuromuscular, Cardiovascular, Respiratory, and Endocrine) would be:

HEENT: No visual disturbance, no tinnitus or hearing loss, no vertigo or dizziness.

Neuromuscular: No deficits in muscular strength, negative cranial nerve testing results.

Cardiovascular: Blood pressure within normal limits, regular rate and rhythm, no syncope.

Respiratory: No signs of hypoxia, SPO2 94% or better, no use of accessory muscles.

Endocrine: Blood glucose within normal range, negative for neuropathy.

**Diagnosis and Differentials**

The most likely diagnosis is the same as the admitting diagnosis: transient ischemic attack (TIA). This is concluded by ruling out the differential diagnoses; here are several of them:

Stroke, Seizure, Hypoglycemia, and Migraine (Hollier & Hensley, 2011, p. 435). Ruling out the differentials requires synthesis of data from the history, review of systems and the following tests.

Tests

The National Stroke Association has established guidelines for testing, including the following: “A set of routine laboratory studies, including complete blood count, chemistry

panel, and basic coagulation studies, should be performed for all TIA patients upon initial presentation” (Johnston et al., 2011, p. 874). Also, “Brain imaging should be obtained urgently. Acceptable options include either MRI or CT; however, MRI is the preferred imaging modality, because diffusion weighted imaging (DWI) facilitates the diagnosis of TIA, and DWI-positive lesions are a risk marker for early stroke recurrence” (Johnston et al., 2011, p. 874).

 Specifically, the routine laboratory studies include, in addition to CBC: platelets, INR, ESR, glucose, lipid profile, and urinalysis (Hollier & Hensley, 2011, p. 435). Carotid studies (ultrasound or angiography) can reveal blockage and atherosclerosis (Hollier & Hensley, 2011).

 ECG can reveal cardiac involvement, and EEG can be ordered if seizure is suspected (Hollier & Hensley, 2011).

 Ruling in/ruling out differentials

 Stroke: This patient likely had a TIA vs. a stroke, given the evidence. Stroke presents with a longer duration of the patient’s reported symptoms than TIA, and does not resolve. TIAs can last from minutes to under 24 hours (Nanda, 2011); ischemic and hemorrhagic strokes are accompanied by severe headache, nausea, and syncope (Liebeskind, 2015). The ***risk*** *of having a stroke is considerable following a TIA*, and the patient will be monitored for such. CT scan or MRI can definitely rule out stroke (Johnston et al., 2011).

 Seizure: At this juncture, seizure cannot be ruled out. An EEG can be performed which will identify, along with CT, or MRI, unusual brain electrical activity, structural anomaly, or circulatory/vascular anomalies ("Neuro tests," 2015). The presentation of this patient indicates more strongly for TIA; unless history of seizure combined with aforementioned tests are positive for seizure.

 Hypoglycemia: Hypoglycemia is low blood sugar, and seizure-like or convulsive episodes are known to occur. Also accompanying hypoglycemia is headache, confusion, and blurred vision (Hollier & Hensley, 2011, p. 239). The patient is not known as yet to be diabetic, nor has he a known history of hypoglycemia. Glucose testing, though not definitive, is a strong indicator for ruling in or out hypoglycemia as cause. Ultimately, hypoglycemia is ruled out because it does not accompany the right sided weakness experienced by the patient, nor does it resolve of its own accord.

 Migraine: Migraine headache can mimic TIA; the symptoms can be very similar. Changes in vision can occur in both, but visual changes tend to be more dynamic in migraine ("Migraine and TIA," 2015). The difference between migraine and TIA is the onset of symptoms; migraines typically come gradually, whereas the symptoms of TIA are sudden. They include: *Sudden* weakness of body parts, particularly one-sided; *sudden* confusion; *sudden* visual problems; and *sudden* dizziness ("Migraine and TIA," 2015, para. 4). The patient’s symptoms more clearly reflect TIA than migraine, thus ruling out migraine.

**Plan**

Short term: Short-term planning for our patient will be determined by the outcomes of his diagnostic testing. Monitoring for stroke is key shortly after a TIA (Johnston et al., 2006). CT/MRI can direct the course of action by helping determine the type of medication if any should be introduced. Aspirin therapy is indicated as a first-line measure, possibly clopidogrel (Hachinski & Jain, 2008). INR and ECG results will indicate embolic and cardiac involvement (such as atrial fibrillation), perhaps resulting in administration of warfarin (Johnston et al., 2006).

Longer Term: This patient has a number of risk factors that require intervention. The American Heart Association asserts, “Because patients with TIA have a substantial frequency of coexistent heart disease that may shorten life expectancy and cause marked morbidity, the potential presence of coronary artery disease, cardiac arrhythmias, congestive heart failure, and valvular heart disease should be considered and treated appropriately” (as cited in, Johnston et al., 2006, p. 309). This will include the monitoring/lowering of blood pressure and blood cholesterol. Diet and exercise modifications can be introduced, along with introduction of medications such as an ACE inhibitor and a statin (Johnston et al., 2006). Smoking cessation must be stressed for this patient, along with monitoring of lipids, blood pressure, and medication compliance (Johnston et al., 2011).

The US Preventative Task Force recommends depression screening for individuals in this age category, along with ongoing diabetes screening, cognitive impairment testing, and abuse of alcohol and drugs ("Recommendations," 2015).

**Immunizations**

The Center for Disease Control’s Advisory Committee for Immunization Practices (ACIP) sets recommendations for immunization schedules. As per ACIP guidelines, recommended immunizations for this patient are, flu vaccine, shingles zoster, pneumococcal PCV13, or possibly PPSV23 if there is record of having had a prior PVC13 ("ACIP," 2015). Tdap boosters should be every 10 years; the patient’s records should be checked for Tdap. Also, a varicella if there is no documentation ("ACIP," 2015).

 For this particular hospitalization, influenza vaccine is recommended for the patient (Ovbiaqele et al., 2009).

**Teaching and Follow-up**

Teaching for this patient centers on lifestyle modifications including smoking cessation, healthy diet, lowering of lipids, and medication compliance. Guidelines recommend follow up every 3 months with visit; cardiac monitoring (ECG for arrhythmia), hypertension control, lipids monitoring and control, ACE inhibitors, or other blood pressure medication (Hachinski & Jain, 2008). Education for patient and family must concentrate on medication compliance, since this has been a failed issue in the past. Compliance will directly affect the primary risk factors for this patient.

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 Name: \_\_\_\_\_Clarke Krugman 4/7/2015\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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