SCRIPT

APHASIA THREE WEEKS AFTER PREGNANCY

SCENARIO #291

NAME
JOANNE GONZALEZ

MEDICAL CATEGORY
Neurology

SCENARIO DIFFICULTY
INTERMEDIATE

SIMULATION ENVIRONMENT
EMERGENCY ROOM

BODY INTERACT™
CLINICAL EDUCATION

Scenario

General description of the scenario info. Corresponds to the initial information presented to the trainee when selecting this scenario.

Title

Aphasia three weeks after pregnancy

Context

Joanne was at home, taking care of her baby when she suddenly had a seizure with uncontrolled movements of the right limbs during approximately one minute. After that, she had difficulty speaking and weakness in the right limbs.

Briefing

Female patient, age 35, is brought to the emergency room by her husband, due to a seizure at home and right hemiparesis with speech impairment afterward, around 60 minutes after the onset of her symptoms. She had a child 22 days ago.

General learning objective

Recognize signs and manage an acute stroke.

Specific learning objectives

Decision making regarding reperfusion therapy
Know indications and contra-indications to intravenous thrombolysis and thrombectomy
Recognize that a non-complicated vaginal delivery is not a contra-indication to thrombolysis

Environment

Emergency room

Speciality

Neurology

Difficulty

Intermediate

Authors

-

Patient characteristics

Characterization of the patient's demographic, habits, behavior and specific status effects.

Avatar

First name

Joanne

Last name

Gonzalez

Age
35

Gender
Female

Race/Ethnicity
Caucasian

Model

Hair color
Light blonde

Eye color
Blue

Smoker
No

Conscious
Yes

Sedated
No

Confused
No

Agitated
No

Last meal over 2h
Yes

Acetylsalicylic acid intolerance
No

Facial palsy
-100

Speech impairment
No

Eyelid closure
0

Notes
The patient has left facial palsy (right mouth deviation).

Patient parameters

These parameter values are used by the simulator to initialize this scenario.

Systolic arterial blood pressure (mmHg)
164

Diastolic arterial blood pressure (mmHg)
102

Heart rate (bpm)
75

O2 saturation (%)
97

Respiratory rate (/min)
14

Blood glucose (mg/dL)
115

Temperature (ºC)
36

Hemoglobin (g/dL)
14.9

Urinary output (mL/kg/h)
0.75

Height (cm)
165

Weight (kg)
68

BMI
24.98

Potassium (mEq/L)
4.1

Sodium (mEq/L)
138

Speech rate (speed multiplier)
0

ABCDE assessment

The items below characterize the patient's physical examination and monitoring findings on admission.

Airway		
Airway observation	2nd Priority	Clear airway. Normal oropharynx. No readily audible abnormal breath sounds.
Breathing		
Chest palpation	Not a priority	Normal: 2L - normal; 2R - normal
Chest percussion	Not a priority	Right: 1R - resonance; 2R - resonance; 3R - resonance; 4R - resonance; 5R - resonance Left: 1L - resonance; 2L - resonance; 3L - superficial cardiac dullness; 4L - superficial cardiac dullness; 5L - resonance
O2 Sat (%)	1st Priority	97
Pulmonary auscultation	Not a priority	Clear to auscultation, with normal vesicular murmurs in all sites.
Respiratory rate (breath/min)	2nd Priority	14
Circulation		
Blood pressure (mmHg)	1st Priority	164/102
Capillary refill time (seconds)	Not a priority	1.3
Heart auscultation	2nd Priority	Regular rate and rhythm, normal S1 and S2 sounds, no murmurs, gallops or rubs.
Heart rate (bpm)	1st Priority	75
Pulse palpation	Not a priority	Carotid - Amplitude: normal; Rhythmic; Radial - Amplitude: normal; Rhythmic, both sides equal; Femoral - Amplitude: normal; Rhythmic, both sides equal; Dorsalis pedis & Posterior tibial - Amplitude: normal; Rhythmic, both sides equal; Popliteal - Amplitude: normal; Rhythmic, both sides equal.

Urinary output (mL/kg/h)	Not a priority	0.75
Disability		
Blood Glucose (mg/dL)	1st Priority	115
Glasgow Coma Scale	2nd Priority	Initial and after aggravation: 11 (E4V2M5) After thrombectomy: 13 (E4V3M6)
Pupil light reflex	Not a priority	Right: Size - 4 mm; Right eye light: 2 mm; Left eye light: 2 mm Left: Size - 4 mm; Right eye light: 2 mm; Left eye light: 2 mm
Exposure		
Abdominal auscultation	Not a priority	Normal hydro-aerial sounds without abdominal murmurs.
Abdominal palpation	Not a priority	6R - tympanic; 7R - tympanic; 6L - tympanic; 7L - tympanic
Abdominal percussion	Not a priority	No visceromegaly.
Temperature (°C)	1st Priority	36

Dialogues

This is a complete list of all the possible dialogue lines both by the health practitioner (on the left) and respective responses by the patient (on the right).

Medical condition		
01. Remember what happened?	1st Priority	She was not feeling good, started complaining about strange movements in her right arm and leg, as I said. She was also feeling difficulties speaking.
02. When did her symptoms start?	1st Priority	I can't say for sure but she was fine about an hour ago.
03. Was she feeling pain?	2nd Priority	No, not really.
04. Does she have any concomitant health conditions?	1st Priority	Yes, she was pregnant and gave birth 22 days ago.
05. How was the delivery of your baby?	1st Priority	It was a normal birth, no surgery was needed.
06. Did she had any severe illness or injury before?	2nd Priority	No.
07. Previous hospitalization?	2nd Priority	Yes. Some years ago she did a surgery, something to do with the mitral valve.
08. Any recent weight changes?	Not a priority	No.
Medication		

01. Has she been taking any medication?	1st Priority	She's not taking any medication.

Nutrition

01. How's her diet?	Not a priority	It's relatively normal.
02. Do you know how many meals she does per day?	Not a priority	I think around five.
03. Have you noticed any changes in her appetite?	Not a priority	No.
04. Do you know when it was the last time she ate?	Not a priority	Three hours ago.

Activity

01. Does she exercise often?	Not a priority	Yes, but not recently, because of the pregnancy.

Risk factors

01. Does she have hypertension?	2nd Priority	No.
02. Does she have high cholesterol?	2nd Priority	No.
03. Has she been under stress recently?	2nd Priority	Yes, of course. It hasn't been easy to manage a three-week-old baby.
04. Does she drink alcohol?	2nd Priority	No, never.
05. Does she smoke?	2nd Priority	No.

Notes

All questions are answered by her husband, Duane Gonzalez.

Diagnostic strategies

The items below characterize the test results that are possible during this scenario, including rules that may condition test results.

Bacteriological examinations

Blood cultures	Not a priority	Negative blood cultures.
Urine culture	Not a priority	Negative urine cultures.

Decision aids

Stroke scale (NIHSS)	1st Priority	022201(3020)00120=15 (Initial) 122221(3020)00120=18 (After aggravation) 021111(2020)00110=12 (After thrombolysis) 000001(1010)00010=4 (After thrombectomy)

Electrophysiology

12-Lead ECG	Not a priority	Normal sinus rhythm.

Imaging

Abdominal CT scan	Not a priority	Liver: normal. Bile ducts: normal. Gallbladder: no calcified gallstones. Normal caliber wall. Pancreas: normal. Spleen: normal. Adrenals: normal. Kidneys: normal. Bowel: normal caliber. Mesenteric lymph nodes: no enlarged mesenteric lymph nodes. Peritoneum: no ascites or free air; no fluid collection. Vessels: normal. Retroperitoneum: normal. Abdominal wall: normal. Bones: normal.
Abdominal radiography	Not a priority	No visible alterations.
Abdominal ultrasound	Not a priority	Assessed abdominal structures present no alterations.
AP pelvis radiography	Not a priority	No significant skeletal alterations.
Cerebral CT angiogram	1st Priority	Occlusion of left MCA.
Chest CT scan	Not a priority	Absence of significant changes of pulmonary parenchyma density and pleural effusion.
Chest X-ray	Not a priority	No visible alterations.
Colonoscopy	Not a priority	Rectum: normal. Sigmoid Colon: normal. Descending Colon: normal. Splenic Flexure: normal. Transverse Colon: normal. Hepatic Flexure: normal. Ascending Colon: normal. Caecum: normal. Ileocecal valve: normal. Terminal Ileum: normal.
Coronary angiography	Not a priority	Coronary angiography not performed due lack of indication.
CT pulmonary angiography	Not a priority	No presence of thrombus. No evidence of aortic dissection.
Head CT	1st Priority	No parenchymal changes; hyperdensity of left MCA.
Lower ext. ultrasound	Not a priority	No significant changes.
Lower extremity CT	Not a priority	No significant alterations.
Neck Doppler ultrasound	Not a priority	Normal carotid artery flow.
Pelvic CT scan	Not a priority	No enlarged retroperitoneal or pelvic lymph nodes. No ascites or free air. No other fluid collection. Blood vessels normal. Bone structures normal. Retroperitoneum normal.
Transcranial doppler	Not a priority	Occlusion of left internal carotid artery siphon.

Transesophageal echocardiogram	Not a priority	No alterations.
Transthoracic echocardiogram	Not a priority	No alterations found to cardiac morphology. Normal left ventricular systolic function.
Upper GI endoscopy	Not a priority	No visible alterations.

Lab tests

Arterial blood gas	Not a priority	Blood pH - 7.39 PaCO2 (mmHg) - 42 HCO3- (mEq/L) - 24.6 BE (mEq/L) - 0.02 Cl- (mEq/L) - 102 Lactate (mg/dL) - 9.0
Biochemistry	1st Priority	Due to simulation of test imprecision, there may be slight differences in the actual results. BUN (mg/dL) - 19 Na+ (mEq/L) - 139 K+ (mEq/L) - 4.1 AST (IU/L) - 21 ALT (IU/L) - 32 AP (IU/L) - 78 CK (IU/L) - 113 CRP (mg/L) - 2.3
Cardiac markers	Not a priority	Due to simulation of test imprecision, there may be slight differences in the actual results. CK-MB Mass (ng/mL) - 2 Troponin I (ng/mL) - 0.01 Myoglobin (ng/mL) - 17
Coagulation tests	1st Priority	aPTT (s) - 36 Prothrombin time (s) - 12.0 INR - 1.0 D-Dimer (ug/mL) - 0.058

Complete blood count	1st Priority	Leukocytes (/uL) - 8500
		Neutrophils (/uL) - 4500 (53%)
		Lymphocytes (/uL) - 3200 (38%)
		Monocytes (/uL) - 410 (5%)
		Eosinophils (/uL) - 280 (3%)
		Basophils (/uL) - 110 (1%)
		Immature granulocytes (/uL) - 0 (0%)
		Erythrocytes (×10/µL) - 4.8
		Hemoglobin (g/dL) - 14.9
		Hematocrit (%) - 44
		MCV (µm³) - 92
		MCH (pg/cell) - 30
		MCHC (g/dL) - 35
		RDW (%) - 12.0
		Platelets (x10³/µL) - 222
Lipid profile	Not a priority	Total cholesterol (mg/dL) - 171
		Triglycerides (mg/dL) - 145
		HDL cholesterol (mg/dL) - 69
		LDL cholesterol (mg/dL) - 73
		Cholesterol ratio (Tchol/HDL-C) - 2.5

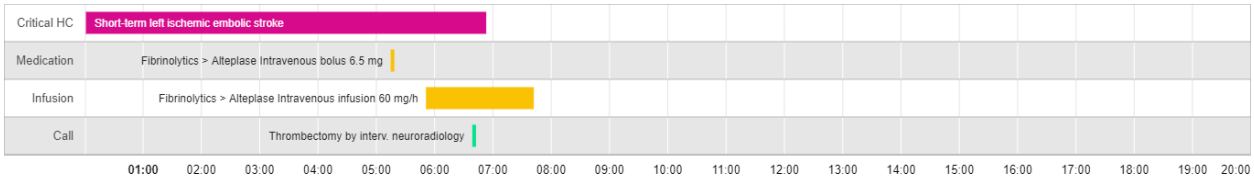
Urinalysis	Not a priority	Specific Gravity - 1.024
		pH - 6.0
		Urine color - Yellow
		Appearance - Clear
		WBC Esterase - Negative
		Protein - Negative
		Albumin - Negative
		Glucose - Negative
		Ketones - Negative
		Erythrocytes - Negative
		Bilirubin - Negative
		Urobilinogen, Semi-Qn - 0.0
		Nitrite, Urine - Negative
		Intoxicants - Negative
Urinary antigens	Not a priority	Streptococcus pneumoniae - Negative
		Legionella pneumophila - Negative

Baseline

This section is automatically generated and predicts scenario behavior assuming no actions by the trainee, which usually represents the worst-case scenario.

Optimal clinical approach

This section previews how the optimal approach resolves the scenario successfully. Comparison with Baseline may be useful to understand the scenario behavior.



Health conditions

This section characterizes the illnesses, or Health conditions, the patient may be afflicted with in this scenario. These serve important foundational purposes in the Scenario, as they can be used to: affect what the patient says in Dialogues; influence how the patient deteriorates over time; condition Examination, Medical test and Call results; and determine the adequate Clinical approach required to solve the case successfully.

Critical health conditions

Short-term left ischemic embolic stroke

Description: Moderate left cerebral artery blockage due to a thrombus originating in another part of the body, with an onset less than 4.5 hours ago. Associated with broca aphasia. After some time leads to severe left ischemic embolic stroke. When treated, broca aphasia is also reverted.
Solution: Fibrinolytic and thrombectomy.

Short-term severe left ischemic embolic stroke

Description: Severe blockage of a blood vessel in the left brain by a clot formed in another part of the body, with an onset less than 4.5 hours ago. Associated with broca aphasia. Does not directly lead to other conditions. When treated, broca aphasia is also reverted.
Solution: Fibrinolytic and thrombectomy.

Treatment priorities

Treatment items that are considered necessary or adequate to solve this scenario are listed below. Notes: 1st Priority - mandatory items to solve the case successfully. 2nd Priority - optional items that are considered adequate, but are not essential. Not a Priority - unnecessary items that are considered inadequate or a waste of time.

Medications	
To treat acute ischemic stroke	
Alteplase	1st Priority
Call	
01	
Thrombectomy by interv. neuroradiology	1st Priority

Differential diagnosis

Multiple choice question presented to the trainee in order to confirm whether they got the diagnosis right.

Correct answer	Left hemisphere ischemic stroke
3 Incorrect answers	Right hemisphere ischemic stroke
	Left hemisphere hemorrhagic stroke
	Brain tumor

Ending messages

Feedback messages presented to trainees for particular successful or failed approaches and the respective conditional rules that trigger these messages.

Title	Type	Message	Conditional
Alteplase + Thrombectomy	Success	Congratulations. You have solved the case according to the guidelines.	If alteplase and thrombectomy are administered, therefore treating the existing health conditions (Note: if only thrombectomy is administered the same success message should be displayed)
Thrombectomy performed (but alteplase not administered)	Success	Congratulations, your practice meets the guidelines' requirements.	
If thrombectomy is not performed	Failure	You have not used all the recommended treatments for the patient. Try again!	If thrombectomy has not been administered after ten minutes.

References

1. Committee TESO (ESO) EC and the EW. Guidelines for Management of Ischaemic Stroke and Transient Ischaemic Attack 2008. *Cerebrovascular Diseases*. 2008;25(5):457-507.

2. Powers WJ, Rabinstein AA, Ackerson T, et al. 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke*. 2018;49(3):e46-e99.

3. Wahlgren N, Moreira T, Michel P, et al. Mechanical thrombectomy in acute ischemic stroke: Consensus statement by ESO-Karolinska Stroke Update 2014/2015, supported by ESO, ESMINT, ESNR and EAN. *International Journal of Stroke*. 2016;11(1):134-147.