Case 6836

Videofluoroscopic evaluation of dysphagia in Wallenberg syndrome
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Patient: 52 years, male

Clinical History:
We describe a case of a patient presented with dysphagia associated with lateral medullary syndrome (Wallenberg syndrome).

Imaging Findings:
A 52 year old male presented with sudden vertigo, instability of gait, sensory loss of left side of the face, severe dysphagia for solid and liquid foods and hypokinetic dysphonia. Past history: hypertension and irritable bowel syndrome.
CT was performed in acute stage and it was negative. MRI was performed in subacute stage with a 1.0T imager. Diffusion-weighted, apparent diffusion coefficient, fluid attenuated inversion recovery (FLAIR-T2) and 3D-TOF angiography sequences have been used. MR imaging showed an altered SI area in the left side of postero-lateral medulla oblongata involving the ambiguous nucleus (AN). Images suggested a diagnosis of stroke in subacute stage.
Swallow was valued using videofluoroscopy with video recording; dynamic study of swallowing was performed with semisolid and liquid bolus without and with compensative postures. It revealed a normal oral preparatory phase, premature loss of food into the pharynx, delayed beginning of swallowing reflex, ipotonic contraction of pharyngeal constrictors, prolonged stasis of bolus in left pyriform sinus, with after swallow penetration in larynx and upper esophageal valve dysfunction.
Compensatory head and neck movements, such as neck flexion and turning head to left side, close the left pyriform sinus and direct the food downward.
Nutritionists suggested an enteral therapy with naso-gastric tube. Moreover patient began speech-therapeutic rehabilitative path; subsequently he showed a clinical improvement of his dysphagia.
Patient underwent MRI and videofluoroscopy after two months. They demonstrated gliotic evolution of the medulla lesion and an improvement of oral and pharyngeal phases.

Discussion:
Wallenberg syndrome is a neurological condition caused by brainstem ischemia in vertebral artery or posterior inferior cerebellar artery territories. Infarction involves postero-lateral medulla and produces different signs and symptoms. Wallenberg’s syndrome is associated with a high frequency of dysphagia. In fact swallowing response control center, “central pattern generator” (CPG), is in brain stem particularly in medulla. The swallowing network includes the nucleus of tractus solitarius and nucleus ambiguous with the reticular formation, linked synaptically to cranial motor-neuron pools bilaterally. Therefore the CPG serially activates the cranial nerve motor-neurons and these innervate the deglutition muscles.
Patients often exhibit dysphagia within 1-2 weeks after stroke but they can improve rapidly, returning to oral feeding
within 1 or 2 months after the stroke. Radiologist’s role in this case is double: he localizes the vascular lesion (MRI examination represents the gold-standard for brainstem); he studies the dysphagia with videofluoroscopy. This is an important step in patient’s diagnostic assessment and rehabilitative path.

In fact this instrumental investigation we allow: to define dysphagia in terms of videofluoroscopic signs, to evaluate deglutition’s efficacy and safety and to assess the effectiveness of treatments. Common problems in Wallenberg’s syndrome are: delayed or absent swallow response, unilateral residue in pyriform sinus as a consequence of unilateral pharyngeal paralysis and impaired aperture of the upper esophageal sphincter (UES). A wide, permanent residue of bolus may lead to post-swallow penetration or aspiration in airways, since the hypopharinx is full of contrast and it can be inhaled or it falls into the airways. Therefore this examination is crucial in order to reveal aspiration, particularly aspiration not followed by cough reflex (silent aspiration); it predisposes to serious complications and affects negatively patient’s prognosis. During videofluoroscopy, postural strategies may be selected to compensate each patient’s deficiency. Support of speech-therapist is important during the examination. Anterior neck flexion protects the air-ways and head rotation toward the paralyzed pharyngeal side directs food to the healthy side, increases pharyngeal transit efficacy and facilitates UES aperture.

Swallowing difficulties also can be treated with diet and changes in bolus volume or viscosity.

**Differential Diagnosis List:** Dysphagia in Wallenberg syndrome.

**Final Diagnosis:** Dysphagia in Wallenberg syndrome.

**References:**


Description: Axial FLAIR image shows an altered SI area in the left postero-lateral medulla oblongata compatible with an infarct. Origin:
Description: Diffusion weighted images confirm the presence of an high signal focus suggestive for stroke in subacute stage. Sagittal T1-weighted image shows gliotic evolution of the medulla lesion (after two months). Origin:
**Figure 3**

Description: Sequence shows a normal oral preparatory phase, premature loss of food into the pharynx, delayed beginning of swallowing reflex, ipotonic contraction of pharyngeal constrictors, prolonged stasis of bolus in pyriform sinuses and upper esophageal valve dysfunction. **Origin:**
Description: Sequence shows the penetration of bolus in larynx.

Origin:
Description: After a speech-therapeutic rehabilitative path, patient shows a clinical improvement of dysphagia. Origin:
Description: Image reveals the stasis of bolus in left pyriform sinus. Origin:
Description: Compensatory head and neck movements, such as neck flexion and turning head to left side, close the left pyriform sinus and direct the food downward, as the images show. Origin:
Description: Origin: