Introduction

Trans-oesophageal echocardiography (TEE) is a diagnostic imaging technique for cardiac structures combining cardiac ultrasound (US) technology and endoscopy. To obtain a cardiac image, the trans-oesophageal probe has to be positioned correctly within the oesophagus, providing views of cardiac structures that are not adequately provided by trans-thoracic echocardiography. Although a semi-invasive procedure, TEE is generally considered a safe diagnostic tool.

Contraindications for a TEE examination are the presence of oesophageal diverticulum, varices, tumours or stenoses; furthermore, TEE is contraindicated in patients who have received therapeutic thoracic radiations.

Several studies have reported TEE-related morbidity ranging from 0.18% to 2.8% with a 0.22% incidence of severe complications such as haematemesis, laryngospasm and hypo-pharyngeal tear. Chan et al. identified TEE complications in 7 out of 1500 adult patients (0.47%). In conclusion, the head and neck surgeon should consider the need of surgical management in cases of retro-pharyngeal haematoma following trans-oesophageal echocardiography.
medical or conservative measures. A case of TEE resulting in upper airway obstruction, requiring surgical intervention, is described.

Case report

A 77-year-old female with a history of chronic atrial fibrillation and short-term onset of transient ischaemic attacks was sent to our institution for TEE to exclude the risk of further embolization. She was a non-smoker, not overweight and had no vascular risk factors such as arterial hypertension, clotting deficiency, or abnormal cholesterol levels. Upon physical examination, she presented no hemiparesis, weakness of an upper limb, vertigo or aphasia; heart rate was 72 bpm and blood pressure 120/80 mmHg, being equal in both arms. Examination of the heart revealed a 2/6 systolic murmur at the apex. Electrocardiography showed atrial fibrillation and a left bundle branch block. The patient presented some limitation in neck movement; none of the high-risk conditions, such as presence of oesophageal diverticulum, varices or tumour, were referred. The anticoagulant therapy was interrupted by the patient herself about one month before the examination. TEE was performed with a commercially available US system (Sonos 5500, Philips Medical System, Andover, MA, USA) equipped with a 5-MHz multiplane transducer. A mild intravenous sedation with midazolam 15 mg, and a local lidocaine spray anaesthesia were administered to the patient. Difficult progression of the instrument (four attempts) required anaesthesiologic support and resulted in a minimal oral bleeding. TEE revealed a mild mitral regurgitation, a thrombus with a diameter of about 1.0 × 0.8 cm at the bottom of the left atrial appendage. Twenty four hours after the procedure, the anticoagulant therapy was started with 5,000 U of subcutaneous low-molecular-weight heparin. Two days after TEE, the patient complained of hoarseness, sore throat and mild dysphagia. Five days thereafter a progressive severe dysphagia and dyspnoea appeared; a neck and thorax computed tomography scan (CT) showed a retropharyngeal right haematoma (cm 7×3) with a pharyngeal and laryngeal mass effect (Fig. 1A). Severe cervical spondylosis was also present (Fig. 1B). Trans-nasal upper airways endoscopy showed a hypo-pharyngeal swelling resulting in a severe reduction of the laryngeal respiratory space. The anticoagulant therapy was discontinued and surgery for evacuation of the haematoma under general anaesthesia was planned. Severe cervical spondylosis conditioned the failure of the oro-tracheal intubation attempts, even under endoscopic guidance, and excluded the possibility of performing a traditional tracheotomy because of the lack of neck extension. Under local anaesthesia, a temporary cricothyroidostomy was then performed allowing tracheal intubation. The patient then underwent left cervicotomy in order to evacuate the airway-obstructing retro-pharyngeal haematoma under general anaesthesia. After exposure of the anterior border of the sternocleidomastoideus muscle, the neurovascular bundle of the neck was exposed. The pharyngeal constrictor muscle was incised and the haematoma was evacuated, while preserving the sub-mucosal and mucosal pharyngeal layers; a suction drainage was left in situ for 3 days. Clinical symptoms showed a prompt improvement in the immediate post-operative period confirmed by daily endoscopic examinations showing a significant reduction of the posterior wall bulge. Due to the subglottic stenosis risk, the status of cricothyroidostomy was assessed every day with endoscopic examination. Cricothyroidotomy was removed as soon as the patient managed to maintain the tracheostomy tube closed (7 days) and 3 days afterwards the patient was discharged.

Fig. 1. Computed tomography scan reveals right retro-pharyngeal haematoma (A) and massive cervical spondylosis (white arrow in B).
Discussion

Retro-pharyngeal haematoma rarely occurs and fewer than 40 cases of traumatic origin have been reported in the last 20 years. To the best of our knowledge, only two cases of airway obstruction, due to pharyngeal haematoma following TEE, have been reported; however, both cases resolved within 24 hours without surgery. The surgical management of a life-threatening retro-pharyngeal haematoma following TEE in a patient on anti-coagulant therapy with severe cervical spondylitis has been reported here for the first time. Even though TEE is considered a safe procedure, upper airway complications may occur; pharyngeal and oesophageal contraindications need to be carefully taken into consideration, including the risk of retro-pharyngeal haematoma. A review of the literature suggests a variety of precipitating factors for retro-pharyngeal haematoma such as bouts of coughing, sneezing, straining, neck trauma, foreign body ingestion, retropharyngeal infection and internal jugular vein cannulation; furthermore, retro-pharyngeal haemorrhage may also be spontaneous. Therefore, in an unclear clinical situation, not only a barium X-ray of the oesophagus, but also fiberoptic nasal-pharyngeal and laryngeal endoscopy, as well as cervical spine radiography should be performed before TEE. In our case, the TEE procedure was complicated by the difficult progression of the instrument, conditioning the formation of a sub-mucosal haematoma; the haematoma was probably triggered by probe injury and became more severe following anticoagulant therapy. In fact, it is not unusual to find retro-pharyngeal haematoma in patients with abnormal platelet function or clotting factor deficiency. Severe cervical spondylitis appeared to be an important factor in determining difficult probe introduction, due to the impossibility to achieve the optimal neck extension for progression of the instrument. Head and neck CT scan was important to understand the role of cervical spondylitis and to differentiate between oedema and haematoma and to study its dimensions and localization. In cases of retro-pharyngeal haematoma, both airways stabilization and haematoma management are required. Endotracheal intubation would generally be sufficient in patients with compromised upper airways; however, in cases of large haematomas like the one described, a tracheostomy would be more appropriate, avoiding the risk of the haematoma rupture with bleeding and increasing oedema. The spontaneous resorption of a large haematoma is possible, but it can take several weeks with the risk of infection or abscess; surgical evacuation seems, therefore, a better solution. The lateral cervical approach was preferred in the reported case, because it prevented retropharyngeal contamination, as other Authors have already suggested.

In conclusion, TEE is feasible in most adult patients as an out-patient procedure, but proper patient selection and preparation is crucial to avoid procedure complications. The otolaryngologist may play a significant role in the assessment of a patient considered at risk. In cases of pharyngeal trauma, retro-pharyngeal haematoma may develop; in these cases, careful observation of the evolution is required, since surgery may be necessary both for airway stabilization and haematoma evacuation.

References


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