and Lehane Grade III laryngoscopic view. The patient’s airway was temporarily secured with a size 4 ProSeal laryngeal mask airway (Intavent Orthofix, Maidenhead, UK). Fibreoptic airway inspection via the PLMA confirmed the CT finding of a large tumour polyp occupying most of the lumen of the right main stem bronchus but not extending to the carina. Our new approach for left DLT placement was executed as illustrated in Figure 1.

Intraoperatively, oxygenation, end-tidal CO₂, and haemodynamics were maintained within normal levels. A right pneumonectomy was performed and the patient was discharged from the intensive care unit on the first post-operative day after a brief period of mechanical ventilation. Histopathological examination confirmed the diagnosis of a low-grade carcinoid tumour.

To the best of our knowledge, this is the first report of the use of the Aintree intubation catheter (AIC) (Cook Critical Care, Bloomington, IN, USA) as a guide for DLT placement. The AIC is a semi-rigid tube of 56 cm in length with an internal and an external diameter of 4.7 and 6.5 mm, respectively. Due to its large external diameter and relatively short length, the AIC was replaced with an 11 Fr extra-firm, blunt tipped, 100 cm DLT exchange catheter (Cook Medical, Bloomington, IN, USA). A 35 Fr left DLT (Broncho-Cath, Mallinckrodt Medical, Athlone, Ireland) with an internal endobronchial diameter of 4.3 mm was railroaded over the DLT exchange catheter into the left main bronchus.

The new aspects of our lung isolation plan are: (i) the fibreoptic-guided endobronchial placement of AIC, (ii) the sequential endobronchial use of AIC and a smaller calibre exchange catheter to ensure the safe placement of DLT into the left main stem bronchus, (iii) airway instrumentation was mostly performed under direct fibreoptic guidance to eliminate the possibility of inadvertent injury to the right main stem bronchial tumour. Despite the success of our technique, it is worth mentioning that DLT exchange catheters should not be advanced against resistance. A new DLT exchanger with a soft flexible distal (7 cm) has been recently introduced into the market to reduce the possible airway trauma (Cook Medical).

Declaration of interest
None declared.

M. Abdulatif*
E. Ismail
Cairo, Egypt
*E-mail: mohamedabdulatif53@gmail.com

1 Brodsky JB. Lung separation and the difficult airway. Br J Anaesth 2009; 103 (Suppl. 1): i66–75
2 Campos JH. Lung isolation techniques for patients with difficult airway. Curr Opin Anaesthesiol 2010; 23: 12–7
4 Campos JH. Which device should be considered the best for lung isolation: double lumen endotracheal tube versus bronchial blockers. Curr Opin Anaesthesiol 2007; 20: 27–31
doi:10.1093/bja/aes157

Effects of oxytocin on Purkinje fibres
Editor—Oxytocin has been available for several decades and is used widely every year for post-partum or labour augmentation. Severe adverse events are extremely rare. To date,
only two cases of arrhythmia have been described after oxytocin administration and were possibly related to the effects of general anaesthesia in patients with long QT syndrome.\(^1\) We previously reported a large but transient QT interval prolongation after an i.v. bolus of 10 IU of oxytocin in women during a surgically induced abortion.\(^2\) This was accompanied by frequent and profound changes in the morphology of both ST-segment and T-wave.\(^2\) These results have been recently confirmed in a report of QT prolongation and increased the heterogeneity of T-wave morphology after oxytocin administration during the Caesarean section.\(^3\) However, these effects may have been the consequence of rapid orthosympathetic tone changes induced by oxytocin. Therefore, the aim of the present study was to assess in vitro the effects of oxytocin on a sensitive multicellular electrophysiological model.

Purkinje fibres were excised from rabbit hearts (laboratory authorization no. A75390) and exposed to increasing concentrations of oxytocin (0.1, 1, and 10 IU/L equivalent to 0.2, 2, and 20 nM respectively; \(n=9\)) at 30 min intervals or to time-matched normal Tyrode’s solution (\(n=9\)) at 36.5 ± 0.8°C. An action potential was recorded using a conventional intracellular glass microelectrode at a stimulation rate of 1 Hz. Fifty per cent and 90% of the action potential duration were calculated (APD\(_{50}\) and APD\(_{90}\), respectively). The experiments were repeated at 0.2 and 3 Hz. Data are presented as mean ± SEM. Comparisons at each time point and between oxytocin and control were performed with ANOVA for repeated measurements.

We found a significant increase in APD\(_{50}\) and APD\(_{90}\) over time, but there was no difference between control and oxytocin experiments (\(P=0.88\) for APD\(_{50}\) and \(P=0.68\) for APD\(_{90}\); Fig. 1A). The maximum increase in APD\(_{90}\) was not significantly different from that exhibited by fibres exposed to control solution (10.8 ± 3.3 ms after oxytocin vs 13.7 ± 2.7 ms with control solution; \(P=0.51\)). The maximum rate of action potential increase (\(V_{\text{max}}\)), overshoot, and resting membrane potential were not affected by oxytocin even at 3 Hz. No early after-depolarization was recorded (Fig. 1A).

We did not observe any significant effect of oxytocin on Purkinje fibres. QT-prolonging drugs lengthen the in vitro cardiac action potential duration as a result of blocking repolarizing currents (mostly iKr). As the multicellular rabbit Purkinje model is very sensitive to QT-prolonging drugs acting by iKr modulation,\(^4\) the lack of significant modification of action potential duration whatever the concentration of oxytocin used suggests that the prominent QTc prolongation in humans in vivo may be related to an indirect cardiac effect of oxytocin. In our previous report, i.v. oxytocin administration was associated with a transient increase in heart rate in humans, and uncorrected QT was not significantly modified.\(^2\) Thus, oxytocin-induced QTc interval prolongation possibly reflects the lag time between heart rate changes and adaptation of repolarization duration.\(^5\) As our study did not show a direct effect of oxytocin on action potential of Purkinje fibres, the ECG changes described in humans may be better explained by sympatho-vagal influences provoked by an abrupt decrease in arterial pressure. We conclude that oxytocin has no direct pro-arrhythmogenic effects in the rabbit model, highly sensitive to iKr block.

**Declaration of interest**

None declared.

**Funding**

This work was supported by UPMC Univ Paris 06, Faculty of Medicine, Department of Pharmacology (Paris, France).

B. Charbit*  
C. Funck-Brentano  
D. Benhamou  
J. Weissenerburger  
Paris, France  
*E-mail: beny.charbit@psl.aphp.fr

doi:10.1093/bja/aes158

Utility of lung ultrasound

Editor—A 61-yr-old male patient was admitted to the intensive care unit (ICU) for postoperative monitoring after partial hepatectomy of segments I and VII and cholecystectomy. The patient had previously undergone right hemicolecctomy in 2010 and partial hepatectomy of IV and VIII for adenocarcinoma (pt3 N1b M1). The patient had adjuvant chemotherapy with capecitabine and oxaliplatinum. He had a history of chronic obstructive pulmonary disease and smoking (40 pack-years).

The patient was admitted to the ICU at 03:30 h after 12 h of surgery. He was analgosedated and artificially ventilated, with stable haemodynamics and a peripheral oxygen saturation of 100%. The fluid balance during surgery was −6160 ml. The first hours after surgery were uneventful. A postoperative chest X-ray (reported as ‘normal’) and standard laboratory tests were performed. Monitoring consisted of continuous invasive arterial pressure, fluid balance, and arterial blood-gas monitoring performed every 6 h. A central venous catheter was inserted into the left internal jugular vein using ultrasound (US) guidance.

On postoperative day 1, at 14:30 h, the patient’s trachea was successfully extubated and a Venturi mask at FIO2 of 0.5 applied. The patient remained stable haemodynamically, but PaO2 showed a negative trend during the afternoon. At 21:45 h, the patient was dyspnoeic, agitated, and sweaty. The arterial PO2 was 7.3 kPa. On auscultation, there were decreased breathing sounds on the left side with rhonchi, but the right chest was normal. A chest X-ray was ordered and performed at 22 h.

A US of the lungs was immediately performed. It showed an area of consolidation involving the whole left lower lobe, with minimal pleural effusion, with an estimated volume <100 ml, and no pneumothorax. Within the consolidation, hyperechoic punctiform areas could be seen and were interpreted as air bronchograms.

This plug was aspirated and bronchial washing was performed with normal saline. After the procedure, the patient showed full regression of symptoms, and chest auscultation showed bilateral and symmetric breathing sounds with no added sounds. A post-procedure US examination of the lungs was performed, showing remission of the consolidation area in the left lung and a normal lung pattern. Blood-gas samples acquired after bronchoscopy showed improved PaO2 and peripheral oxygen saturation above 95%. The chest X-ray taken during the symptomatic period was reported as a left pleural effusion.

We present a case underlining the potential usefulness of performing US imaging of the lungs in a dyspnoeic patient with a rapidly worsening hypoxaemia and a unilateral reduction in breathing sounds. At the base of the left lung, we detected a ‘lung pulse’ which has a sensitivity of 93% and a specificity of 100% for the diagnosis of atelectasis. The X-ray report, which arrived 15 min after bronchoscopy, suggested a pattern compatible with minimal pleural effusion. The capacity of US to detect alveolar consolidation is high, with a sensitivity of 90% and a specificity of 98%, while chest radiography data are known to be imprecise.

We highlight the importance of US imaging of the lungs in the ICU.

E. Arbeid1*
F. Forfori1
G. Bernardeschi1
F. Giunta1
T. M. Hemmerling2
1Pisa, Italy
2Montreal, Canada
*E-mail: erikarbeid@gmail.com

Fig 1 Ultrasound imaging of the patient’s lung. It shows an area of consolidation (defined by an area of hypoechoic hepatized tissue) involving the whole left lower lobe, with minimal pleural effusion, with an estimated volume <100 ml, and no pneumothorax. Within the consolidation, hyperechoic punctiform areas can be seen and were interpreted as air bronchograms.