Intracavitary fibrinolysis directly under vision during medical thoracoscopy

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Background: Multiloculated pleural effusion or trapped lungs often occur in patients with malignant pleural effusions. These conditions limit the view during MT, making it difficult to perform pleural biopsies. We thought of performing intravascular fibrinolysis through the trocar with the thoracoscope in direct vision to see the live effect of the fibrinolytic and check for bleeding in real time.

Clinical Case: in a 71-years old man with right complicated pleural effusion, we decided to perform a MT. The Ultrasound check showed an organized pleural effusion with loculations and diffuse pleural thickening. With a thoracoscope inserted through the trocar into the thoracic cavity we observed a remarkable intrapleural fibrin deposition (Figure 1A). We attempted to breakdown mechanically and remove the fibrin networks, but it was not possible to see the chest wall and parietal pleura. Therefore, we reconstituted 100,000 IU urokinase in 50 mL of 0.9% saline solution and instilled into the pleural cavity using a syringe connected to the MADmagic® (Teleflex Medical, Morrisville, NC, US), an atomization device that is normally used to instill local anesthetics on the laryngo-tracheal mucosa. The MADmagic® was passed together with the thoracoscope through the trocar, making it possible to see in real time where the solution was directed (Figure 2). In the meanwhile, we have checked the action of the urokinase under vision. After about 10 minutes, we observed that the network of septa had significantly decreased and that some portions of the parietal pleura were visible. No adverse effects had occurred, no bleeding was observed. We then identified where to take pleural biopsies, which were taken at different points in the parietal pleura (Figure 1B). MT ended without any complications. The histological diagnosis was pleural localization of squamous lung cell carcinoma.

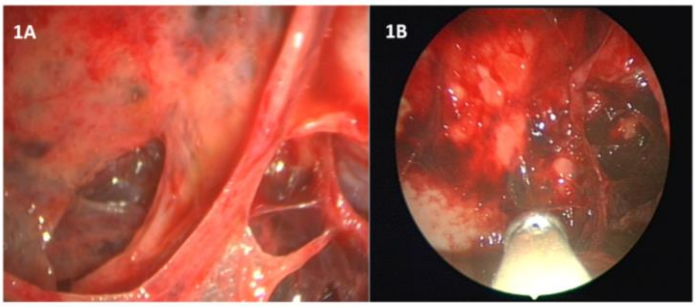

Figure 1: pleural cavitiy before instillation of urokinase (A). Exposed parietal pleura after instillation of urokinase (B)

Conclusions: In our case, we instilled the urokinase through the trocar with the rigid thoracoscope directly under vision, concentrating the jet of the drug in the affected areas, avoiding septa that might appear highly vascularized to minimize the risk of bleeding. Our case shows that the direct instillation of intrapleural urokinase during thoracoscopy can give the possibility of expanding the therapeutic capacity of the MT and fibrinolysis and of expanding the diagnostic capacity of MT. In addition, direct vision of the jet of solution containing the drug may further reduce the risk of bleeding in patients with malignant pleural effusions.

Figure 2: syringe connected to the MADmagic® to instill urokinasy through thoracoscope

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