



Interview with Prof. Duilio Divisi: reflections on malignant pleural effusions

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Editor's note

As an emerging journal, *Journal of Xiangya Medicine (JXYM)* has published a number of special series in recent years, receiving overwhelming responses from academic readers around the world. Our success could not have been achieved without the contribution of our distinguished guest editors. Taking this opportunity, this year *JXYM* launched a new series, "Interviews with Outstanding Guest Editors", to highlight our active contributors. We hope to express our heartfelt gratitude for their tremendous effort and further uncover the stories behind the special series.

The special series "Malignant Pleural Effusion" (1) led by Prof. Duilio Divisi (*Figure 1*) and Prof. Roberto Crisci from "G. Mazzini" Hospital of Teramo has attracted numerous readers since its release. The aim of this series was to identify the best strategies in order to reduce the discomfort of patients and minimize the impact of the underlying disease on everyday life. At this moment, we are honored to have an interview with Prof. Divisi to share his scientific career experience and insights on this special series.

Expert introduction

Duilio Divisi is currently working as a Professor at the Department of Life, Health & Environmental Sciences, University of L'Aquila, Thoracic Surgery Unit, "Giuseppe Mazzini" Hospital of Teramo, Italy.

Mr. Duilio Divisi earned his Italian Thoracic Surgery Degree magna cum laude from "La Sapienza" University in Rome. He is Senior Thoracic Surgeon at Hospital of Teramo (Italy), upon return of a wide thoracic surgery and lung transplantation experience as "Assistant des Hôpitaux,

Chef de Clinique des Universités" at Department of Thoracic Surgery, University of South Lyon, "Louis Pradel" Hospital of Lyon (France). During this time, He studied the lung preservation in various experimental autotransplant animal models and published of this topic.

As of 2000, He is teaching thoracic surgery and respiratory diseases into the "Faculty of Medicine" at the University of L'Aquila.

Since June 2020 Mr. Divisi is Professor of Thoracic Surgery at the University of L'Aquila.

The clinical and research area mainly focus on minimally invasive thoracic surgery in lung cancer and thymic tumours, chest wall resection and reconstruction, lung volume reduction surgery, sympathetic surgery, benign and malignant pleural disease.

Mr. Divisi has authored several original publications in scientific journals and textbook chapters within his field of interest. He carried out numerous presentations at several national and international conferences.

Interview

JXYM: As a reputable expert in malignant pleural effusion (MPE), what originally leads you to the study of MPE?

Prof. Divisi: MPE determines both diagnostic and clinical problems. The main tumors related to MPE range from bronchogenic carcinoma to breast cancer, from lymphomas to genito-urinary and gastrointestinal structures. The MPE represents a worsening of the underlying oncological disease, with an average survival less than 12 months. The differential diagnosis with the paraneoplastic pleural effusions is critical in order to optimize the treatment. The



Figure 1 Prof. Duilio Divisi.

combination of cytological smears and cell blocks on MPE is highly recommended, showing an excellent diagnostic accuracy. The talc (poudrage or slurry) pleurodesis is the most commonly used procedure to reduce fluid in the pleural space. Different drugs (iodopovidone, silver nitrate, doxycycline, bleomycin, mitoxantrone, cisplatin, interferon alpha-2 β , loboplatin + erythromycin, corynebacterium parvum) have also been tested, but their superiority in obtaining a valid pleurodesis was not confirmed with clear statistical evidence from various studies. The indwelling pleural catheter (IPC) is now considered a first-line option in the treatment of MPE. The role of surgery in NSCLC patients with MPE is still widely debated, since the complete removal of the parietal pleura indicated only in selected patients is burdened by a high rate of morbidity and mortality.

JXYM: *Would you like to give us a general picture of the publications on MPE? Any topics or papers that impressed you most in the past few years?*

Prof. Divisi: Clive *et al.* (2) carried out a meta-analysis through the Cochrane Database. The study promotes talc as a first-choice method, although other studies highlighted adverse events such acute respiratory distress syndrome (ARDS). The problem would be related to the size of the talc particles: small particles would determine a strong systemic inflammatory reaction complicated by a significant mortality rate while the use of larger particles (average size: 20–25 μm) would not it is burdened by it. Wahidi *et al.* (3), in a randomized trial, displayed that the evacuation

of the pleural fluid carried out daily by IPC is associated with a percentage of pleural symphysis greater than standard drainage (47% *vs.* 24%); furthermore, the time of pleurodesis is shorter with the first procedure than the second (54 *vs.* 90 days).

JXYM: *There are many treatment options for patients with MPE, including IPC, talc pleurodesis (TP), intrapleural infusion of drugs, surgery and molecular targeted therapy. Given your experience in the field, how should patients choose the appropriate therapy for MPE?*

Prof. Divisi: The indications for pleurodesis depend on three conditions: (I) the effusion relapses rapidly after evacuation; (II) thoracentesis or drainage considerably improves the patient's clinical condition; (III) a satisfactory re-expansion of the pulmonary parenchyma after evacuation. This last condition is fundamental since, if there is no contact between the visceral and parietal pleura, the permanent fusion of the two structures is impossible. There is no unanimous consensus in literature regarding the most suitable method to ensure the best pleurodesis. Talc is the most available chemical agent, with a low percentage of side effects and the least expensive. I would start with talc poudrage by video-assisted thoracoscopy, optimizing or changing the technique according to the patient's clinical response.

JXYM: *It is known that MPE recurs rapidly, what are the prognostic factors of recurrence of MPE and how to better manage it?*

Prof. Divisi: The recurrence of MPE depends on the lack of control of the underlying disease and the alteration of the fluid mechanics of the pleura. In fact, the effusion in the pleural cavity is linked to the balance between systemic circulation of parietal pleura (intercostal arteries) and pulmonary and bronchial circulation: the hydrostatic pressure lets the fluid to filter from the systemic parietal capillaries into the pleural space where it is reabsorbed by the lymphatics of the pleura (parietal and visceral) also through to the colloid osmotic pressure of plasma proteins. Any alteration of this balance, regulated by Starling's law, allows the effusion that transforms the pleural space from virtual to real. I believe that the treatment of the disease originating the effusion should not be suspended; the pleurodesis technique to be adopted should be suggested by the general assessment of patient's performance status.

JXYM: *What kind of projects are you recently working on? How is the topic of this special series associated with some of them?*

Prof. Divisi: My main research fields are lung cancer and primary and secondary tumors of the pleura and chest wall. It is evident that MPEs are a common and recurrent problem in my clinical activity. Unfortunately, patients with MPE show difficulty in functional recovery; my daily challenge is to ensure the best quality of life for patients. The chemical pleurodesis during VAT improves respiratory capacity, reducing the use of thoracentesis and allowing better tolerance of any chemotherapy treatment. As I have already said, I prefer talc poudrage but different drugs can be used according to personal clinical experience.

JXYM: *If there is a chance to update this special series, what would you like to moderate, add or emphasize more?*

Prof. Divisi: I would more investigate the topics concerning the role of cytology (cytological smear and cell block), biochemical analysis of the fluid and molecular biology in order to offer cancer patients a targeted and minimally invasive treatment. If you think about the role of immunotherapy, alone or associated with conventional therapy, in the fight against lung cancer, you understand the need to have more and more detailed molecular panels. I believe that the evolution and progress of research on checkpoint inhibitors and the optimization of less invasive surgical techniques improve outcomes significantly in MPE patients in terms of quality of life and overall survival.

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