

WABIP Newsletter



Volume 06

Issue 02

May 2018

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Future of Guided Bronchoscopy for Transbronchial Biopsy of Peripheral Lung Nodules

Surgeons and pulmonologists are asked to see an increasing number of patients with pulmonary nodules. When tissue diagnosis is required, transthoracic needle aspiration (TTNA) has been the standard of care for the majority of patients. TTNA has a high yield of 90% which is usually not limited to the location of the nodule. However, TTNA also has a pneumothorax rate of about 25% and as such, may not be suitable for some patients. Traditional flexible bronchoscopy has a relatively low yield for the diagnosis of pulmonary nodules depending on the size and location of the nodule. Newer technologies to guide flexible bronchoscopy has emerged over the past 10-20 years as a viable option when the bronchoscopist has the expertise. These technologies include virtual bronchoscopy, electromagnetic navigation bronchoscopy (ENB), radial probe endobronchial ultrasound (RP-EBUS) and ultra-thin bronchoscopy.

A meta-analysis published in 2012 looking at the role of guided bronchoscopy for the evaluation of pulmonary nodules showed a pool diagnostic yield of 70% which is still lower than TTNA but significantly higher than traditional flexible bronchoscopy (1). Perhaps the advantage of guided bronchoscopy is the low adverse event rate with only 1.5% chance of pneumothorax. However, the majority of the publications assessed in the meta-analysis were from expert centers in the world, data from clinical studies and the numbers may not reflect the real world. A recent study looking at the AQuIRE Registry for the diagnostic yield and complications of bronchoscopy for peripheral lung lesions showed a slightly different result (2). The overall diagnostic yield of bron-

choscopy was only 53.7%, although the sensitivity for lung cancer was between 60-74%. Interestingly, unadjusted for other factors, the diagnostic yield was 63.7% when no RP-EBUS and ENB were used, 57% with RP-EBUS alone, 38.5% with ENB alone and 47.1% with ENB and RP-EBUS combined. Transbronchial needle aspiration (TBNA), larger lesion size and non-upper lobe location was associated with increased diagnostic yield on multivariate analysis. Complications only occurred in 2.2% of patients. After over a decade of experience with guided bronchoscopy, are we still not getting any better with transbronchial biopsy of peripheral lung nodules?

The introduction of robotics has changed the landscape of minimally invasive surgery. In particular, retrospective studies published over the past decade show that robotic surgery for lung cancer has the advantages of minimally invasive surgery for patients and some advantages over VATS for the surgeon. Although data is limited, oncological outcomes are comparable with those of VATS and open surgery while lymph node dissection may be more radical. However, the high costs of purchase, maintenance and consumables are a concern. Nevertheless, robotic thoracic surgery is widely being adopted into practice, especially in North America. What about robotics for bronchoscopy?

At least two companies are developing robotic bronchoscopy platforms. A first in human study was presented at the Chest 2017 annual meeting using the Intuitive Surgical robotic assisted bronchoscopy system [3]. 30 patients with small peripheral lung nodules (mean axial size 12.5 +

4.3mm) underwent robotic-assisted biopsy. There were no complications and the overall diagnostic yield was 83%. A similar robotic platform (Monarch) developed by Auris Health has been shown to be able to reach further out in the lung compared to a conventional thin bronchoscope with an identical outer diameter in cadavers [4]. Furthermore, Auris Health recently received FDA approval for the clinical use of the Monarch system. The unique features of the robotic platforms may be the ability to navigate out into the distal airways under continuous visualization and the ability to maintain static position. These new robotic platforms will likely improve the diagnostic yield but more interestingly enable precise transbronchial therapeutics. The future of guided bronchoscopy is bright, and I look forward to the innovations.

Editor-in-Chief
Kazuhiro Yasufuku

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Technology Corner

Transcutaneous Microwave Ablation for Inoperable Lung Cancer



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Introduction

With an estimated 234,030 new cases for 2018 (American Cancer Society 2018), lung cancer is by far the leading cause of cancer death in the United States, accounting for an estimated 154,050 deaths, more than breast, prostate and colon cancers combined. Despite relentless advances in surveillance and imaging and knowledge, the number of patients at initial presentation with surgically resectable local disease remains soberly small at under 30%, compounded by the realization that many with resectable disease are rendered medically inoperable by comorbid disease. Over recent decades, most importantly the last, evolutionary inertia has refined local control measures on all fronts, surgical and nonsurgical, through improved technology and its application and patient selection. Although surgical lobectomy remains the gold standard for early stage non-small cell lung cancer (NSCLC), noninvasive and minimally invasive nonsurgical measures for local control stereotactic body radiotherapy (SBRT) and image-guided tumor ablation (IGTA), respectively, have been increasingly accepted and utilized for local control and cure for both medically inoperable and even medically operable lung cancer patients. To date, much of the medical literature has focused on radiofrequency ablation (RFA) in the “high-risk,” or medically inoperable population with NSCLC, but more recently, has featured microwave ablation (MWA), reflecting the technologic shift and availability to more efficient heat energy delivery.

Background

Similar to RFA, MWA achieves cell injury and death through tissue heating and coagulation necrosis and can be performed percutaneously, laparoscopically or via open surgical access; however, unlike RFA, MWA operates at higher frequencies on the electromagnetic spectrum, and most importantly, the energy is not distributed through an electrical current, eliminating the need for grounding pads. At the 2 most used microwave frequencies (915 MHz and 2450 MHz), electromagnetic microwaves induce frictional heat by inducing kinetic energy in affected water molecules through oscillation. The spinning water molecules interact and transfer kinetic energy into the surrounding tissues resulting in tissue heating. With more efficient heating compared to RFA, MWA offers superb tissue penetration, higher temperatures and less sensitivity to potential vascular and bronchial heat sinks, all of which contributing to quicker and larger volume ablations.

Clinical Application

Although MWA has yet few 5-year results and the literature still premature in terms of patient numbers and uniformity, MWA has demonstrated comparable, if not improved, overall and cancer-specific survival and local control rates compared to RFA at 1-, 2- and 3-years in some series with favorable complication profiles. As comparison, the first RFA 5-year data¹, published in 2007, showed overall survival rates of 78%, 57%, 36%, 27% and 27% at 1-, 2-, 3-, 4- and 5-years, respectively. Although the results were modest, it is important to realize that these results were achieved in stage I NSCLC patients who were medically inoperative. Overall survival and local tumor progression-free rates were significantly better for those patients with ≤ 3 cm tumors compared to those patients with > 3 cm tumors. With refined patient and lesion selection and technology and operator experience, results have notably improved. The ACOSOG z4033 trial² (RFA of Stage IA NSCLC in Medically Inoperable Patients) reported overall survival at 86.3% and 69.8% at 1- and 2-years, respectively, and local tumor recurrence-free rate at 68.9% at 1-year and 59.8% at 2-years. At this time, there are no large multicenter trials evaluating MWA, and most published reports are single center retrospective series which often include the use of multiple MWA systems using variable powers and antennas and heterogeneous treated patient pop-

ulations with both early and advanced stage NSCLC and pulmonary metastases.

The first large study of MWA³ in the lung included 50 patients, 27 of whom with NSCLC, with overall 1-, 2- and 3-year survival rates of 83%, 73%, and 61%, respectively. Survival in this series was not associated with tumor size, in contrast to previous RFA studies. Belfiore et al⁴ ablated 69 unresectable lesions (44 lung cancers, 25 lung metastases) in 56 patients with cancer-specific survival rate of 69% at 1-year, 54% at 2-years and 49% at 3-years, although did not report specifically for early stage lung cancers. Lu et al⁵ performed MWA on 69 medically inoperable patients with NSCLC and lung metastases. The overall survival rates for NSCLC at 1-, 2- and 3 years were 75.0%, 54.2% and 29.2%, respectively, and the recurrence-free survival rates at 1-, 2- and 3- years were 72.9%, 50.0% and 27.1%, respectively. Yang et al⁶ performed MWA on 47 patients with stage I medically inoperable NSCLC with overall survival rates at 1-, 2-, 3- and 5- years of 89%, 63%, 43% and 16 %, respectively. The local control rates at 1-, 3- and 5- years were 96%, 64% and 48%, respectively. The median cancer-specific and median overall survivals were 47.4 months and 33.8 months. Zheng et al⁷ performed MWA on 183 patients, including 138 NSCLC, with median survival at 23.7 months and 4-year overall survival at 29.6%. Local tumor progression occurred in 19.1% and was associated with emphysema and larger maximal tumor diameters. More recently, Healey et al⁸ ablated 108 patients (82 NSCLC) and reported the actuarial survival rates at 1-, 2- and 3-years of 78%, 54% and 39%, respectively. The odds of primary technical success were 11.1 times higher for tumors < 3 cm versus those > 3 cm, and for every millimeter increase in original tumor maximal diameter, the odds of not attaining success increased by 7%. Local tumor recurrence rates were 22%, 36% and 44% at 1, 2 and 3 years, respectively. Finally, Yao et al⁹ recently compared propensity-matched 54 patients undergoing MWA to 108 patients undergoing lobectomy for the treatment of stage I NSCLC without significant difference between the two groups in overall survival, disease free survival, local tumor progression or rate of distant metastases. The complication rate was lower in the MWA group. While this data should not support MWA supplant surgical resection, it identifies the need for randomized controlled trials evaluating MWA versus other local therapies.

Conclusion

As a method for safe and effective local therapy, image-guided tumor ablation, including MWA, for NSCLC is particularly poised for success, given it provides a reasonable balance of comparable survival especially when considering the longer track record of RFA results, low cost and experiential use in the high-risk patient and other emerging patient populations, much of which unfathomable a decade prior. When critically compared to surgical resection and SBRT, image-guided ablation is an attractive option with an acceptable threshold for local control balanced with risk and cost without detriment to survival.

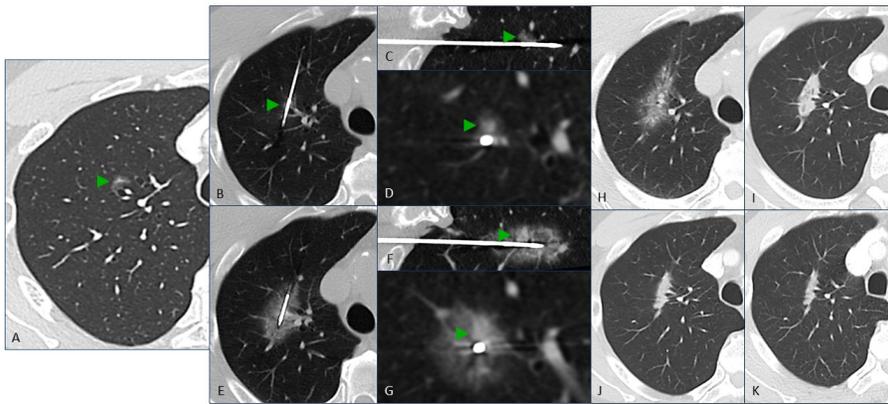


Figure A) Screening CT image demonstrates 8 x 8 mm part-solid nodule within the right upper lobe; subsequently biopsy-proven invasive adenocarcinoma.

Figure B) Intraprocedural axial image shows microwave antenna initially positioned for ablation and confirmed on sagittal (**Figure C**) and coronal (**Figure D**) images relative to the cancer.

Figure E) Intraprocedural axial image displays characteristic ground glass attenuation beginning to encompass the cancer and confirmed on sagittal (**Figure F**) and coronal (**Figure G**) images. The antenna was repositioned twice (not shown) to cover the entire cancer; total ablation time at 3 stations = 10 minutes at 65 watts.

Figure H) Postprocedure image demonstrates expanding ground glass attenuation now clearly encasing the cancer in its entirety without pneumothorax.

Figure I) Single CT image shows retraction and now well-margined ablation zone, typically seen at 1 month, without visualization of the original cancer.

Figure J) 6 month CT demonstrates continued involution of the expected ablation zone.

Figure K) 12 month CT shows further contraction of the expected ablation zone without evidence for tumor progression/recurrence.

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Spray Cryotherapy



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Airway recanalization is generally attempted to provide palliation for symptoms (1) due to lung volume loss and hypoxemia. It is also done to decrease the likelihood of a significant airway hemorrhage leading to blood loss or drowning. Relief of mechanical airway obstruction also reduces the likelihood of post obstructive pneumonia. The majority of airway recanalizations are done for malignant airway obstruction. However, patients with non-malignant airway obstructions may also derive benefit (2). Airway recanalization modalities broadly fall into two categories: heat based and cold based. Examples of heat based recanalization devices include Laser and Argon plasma coagulation. Examples of cold based recanalization devices include cryo spray ablation and flexible cryo probe. Mechanical debriders such as rigid bronchoscopy and micro debrider bronchoscopy are also available. A combination of these modalities are used commonly to achieve palliative goals. Heat based recanalizations require the airway FiO₂ to be less than 0.4 to avoid airway fires. Gas embolism is also a potential complication of argon plasma coagulation. It is beyond the scope of this article to discuss all modalities of airway recanalization. We will focus on cryo spray ablation for central airway obstruction.

Spray cryotherapy (SCT) is a relatively new modality available to the trained interventional pulmonologist or thoracic surgeon as a reliable tool in providing palliative airway recanalization to a carefully selected patient. The third generation truFreeze system (CSA medical, Lexington, MA, USA) is approved for airway applications. This system uses liquid nitrogen as the cryogen and is delivered through a specialized braided catheter that is compatible with the working channel of a standard therapeutic bronchoscope. The liquefied gas is delivered through the catheter at low pressure (2-4 PSI). The gas expands 700 fold after exiting the catheter and drops the temperature to -196° C, thereby providing the desired effect on tissue. Therefore, allowing egress of the gas is of paramount importance to avoid barotrauma.

SCT is a temperature dependent modality that is shown to be safe and effective in the treatment of central airway obstruction (CAO). It utilizes flash freezing of tissue at a temperature of approximately 196° C, resulting in non-contact cell death of tissue with relatively high water content (malignant cells, granulation tissue). Anhydrous tissue such as extracellular matrix and collagen that are an important component of airway tree is spared, making it a desirable tool for airway recanalization (3). Regenerative growth of tissue is also not impaired. Targeted delivery of low dose liquid nitrogen with 2 cycles of 5 second duration has been shown to cause tissue damage of up to 1.5 mm in the human airway (4).

Patients with symptomatic central airway obstruction (CAO) due to malignant or non-malignant disease processes are candidates for Cryospray ablation (5). Patients should be able to tolerate general anesthesia. It is preferred that in most cases a rigid bronchoscope be used to allow passive venting of nitrogen. However, a flexible bronchoscope with an endotracheal tube can also be safely used in patients who are unable to tolerate rigid bronchoscopy. In our institution, we undertake specific precautions when we use a flexible bronchoscope: we deflate the cuff of the endotracheal tube during activation and use an endotracheal tube with a subglottic port connected to a suction tubing for active venting of nitrogen. The endotracheal tube is stabilized with a mouth guard that holds the tube in position when the cuff is deflated. In both situations, the patient is disconnected from the ventilator during activation. Airway FiO₂ need not be adjusted for this procedure. Transient desaturations is not uncommon as nitrogen displaces oxygen from the pulmonary circuit but recovery is usually quick. We recommend not more than five to seven activations per site in the tracheobronchial tree. Visual and tactile verification of gas egress is important. The device is used as a noncontact form of tissue destruction. The catheter is passed approximately a centimeter distal to the working channel of the bronchoscope. After the nitrogen is activated with a foot pedal, shortening of the catheter is observed followed by circumferential ice formation. The timer is started at this point for 5 seconds and counts as an activation. Two settings, low and medium flow are available to the operator. We strongly recommend having trained support staff. Palpation of the chest wall and neck for crepitus after each activation will also allow early recognition of potential complications. Gas embolism has not been reported with SCT.

Proximal tracheal lesions present a specific challenge for airway recanalizations in general and particularly with SCT. Given the proximity of the entrance of the gastrointestinal tract, there is a significant risk of gas egress into the GI tract causing visceral organ damage or rupture. Proximal tracheal lesions are usually addressed with laryngeal mask airway (LMA) or suspension laryngoscopy, as rigid bronchoscopy and endotracheal tube is not practical. Access to physicians trained in suspension laryngoscopy and the equipment itself is not readily available in most institutions. In our institution, we devised a method by which we use an esophageal balloon to occlude the proximal GI tract and were able to successfully perform SCT on patients with proximal airway obstruction with laryngeal mask airway (accepted for publication, with revisions). We used a 5.5 cm esophageal balloon (Merit Medical Endotek, South Jordan, UT) and inflated it to 12 mm at 8 ATM pressure to fully occlude the esophagus to prevent nitrogen entry into the gastrointestinal tract. In addition, a dedicated staff member was asked to palpate the abdomen for distension during activation as an extra precaution.

We view SCT as one of the myriad tools available for airway recanalization for malignant or non- malignant CAO. It can be used as a standalone device or in conjunction with other tools. Specialized training is necessary for the operator as well as support staff. In trained hands and carefully selected patients, it is a valuable tool that provides long lasting palliation of symptoms caused by airway obstruction.

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Figure 1: Cryo spray therapy console



Figure 2: Pre treatment and 6 weeks post treatment

Humanitarian News

The Global Displacement Crisis Requires a Global Responsibility

More than 65 million people around the world are now officially displaced from their homes by conflict, violence and persecution. Since the Second World War such high figures had not been ever recorded by the United Nations.

Between January and September 2017, nearly 140,000 refugees and migrants arrived on European shores. Two-thirds of them came through the Central Mediterranean Route, but an increasing amount of people are using the Eastern Mediterranean Route to cross to Greece. In the previous year more than 360,000 migrants, including refugees, had arrived in Europe by sea. The Central Mediterranean is the deadliest migrant route in the world. Nearly 5,000 deaths recorded killed or missing in 2016, mostly travelling on smugglers' boats departing from Libya, Tunisia or Egypt, risking their lives in search of safety in Italy.

In spite of the huge impact of the so called "migrant crisis" in Europe on the media and on the daily life of Europeans, that massive displacement is not at all the main destination of people in need of escaping their original hometowns. The majority of people are displaced within their country of origin, or remain close to it. The deadly conflict with Boko Haram in Nigeria has forced 1.8 million people to flee their homes and search for safety in other parts of the country. Lebanon, with a population of 4.5 million people, is hosting more than one million Syrian refugees. And also many refugees are currently living in overcrowded camps on the borders of Turkey and Jordan.

As the crisis enters its third year, Europe continues to struggle with how to respond to the influx of more than a million refugees and migrants. The overall proportion of children among arrivals remains being around 15%. Reception conditions remain of concern, particularly on the Greek islands where the refugee and migrant population increased by 27 per cent in 2017, leading to overcrowding and lack of services in Reception and Identification Centres. UNICEF has also shown a deep concern about the increase in the number of unaccompanied and separated children (UASC) in protective custody. It is known that children and teen-agers traveling alone due to limited resources, as well as those showing the lower levels of education, are highly vulnerable to exploitation by smugglers and criminal groups over the course of their journeys.

The EU and its member states continue efforts to prevent arrivals and outsource responsibility for migration control to countries outside the EU. In Libya the EU is pursuing a containment strategy in cooperation with their authorities, despite overwhelming evidence of pervasive abuse against asylum seekers and other migrants arbitrarily detained in Libya. However, the situation is so dangerous mainly in Syria and Afghanistan, that no barrier, whether administrative or physical is being able to stop the migrant arrival. Not even the risk of death in a highly dangerous journey.

European border closures and restrictions have dramatically worsened the situation for these vulnerable people and created a humanitarian crisis. More than 60,000 of them have been left stranded in Greece as well as more than 8,000 in Macedonia and Serbia due to the implementation of the EU/Turkey deal in March 2016 and the shutdown of the Western Balkans route to Europe. Ninety-four percent of refugees are from the world's top 10 refugee-producing countries, led by Syria (69 per cent), Afghanistan (19 per cent) and Iraq (6 per cent).

The current conditions make these survivors of the perilous journey across the Mediterranean, live in overcrowded sites that lack food and basic services such as medical care, water and sanitation.

As Filippo Grandi (UNHCR High Commissioner) told "Syria is the biggest humanitarian and refugee crisis of our time, a continuing cause of suffering for millions which should be garnering a groundswell of support around the world."

Nongovernmental organizations performed roughly 40 percent of rescues in the central Mediterranean in the first half of 2017. However, many organisations had to stop their activities due to security concerns and increased interceptions, sometimes reckless and accompanied by abuse, by Libyan coast guard forces.

Unfortunately, this increase in mass movement of people has been accompanied by hostility and a cry of overpopulation in some of the countries in Europe. Most probably with no reasonable argumentation, some of the recent terrorist attacks,

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have been linked to incoming migrants. Probably the worst face of this crisis is that mass migration has also created the conditions for smuggling humans into Europe via illegal channels. Many people in Europe have shown hate and fear and gave rise to other expressions of racism and xenophobia. And large groups of people blame the migrant or refugees for the impairment of working conditions and unemployment. Probably the only thought behind those feelings is that many people do not like the idea of sharing their land and resources with non European peoples.

However, on the other hand, the favourable reception of refugees from a large part of the European civil society is strong enough to have pushed the government leaders- some more than others- to a less restrictive discourse.

Displacement of peoples during hard times has been constant along history. Europe itself is the product of migrations that took place during the Middle Ages. There is no “pure” nationality anywhere. All the countries have been built on the displacement of different peoples in the past, and they are what they are because of the work and the efforts of generations of people coming from remote lands, fleeing from the dangers of the time. Beginning in 1845, nearly 2 million refugees from Ireland crossed the Atlantic to the United States in the dismal wake of the Great Hunger. About 2 million Italians settled between 1880–1920, and just 1 million between 1900–1914 in Argentina. But even quite recently, during and after Second World War, Europeans were fleeing. Most European Jewish who had survived concentration camps or had been in hiding, were unable or unwilling to return to eastern Europe because of postwar antisemitism and the destruction of their communities during the Holocaust. They were housed in displaced persons camps and urban displaced persons centers established in Allied-occupied Germany, Austria, and Italy for refugees waiting to leave Europe.

At that time, the legal body of refugee law was created in Europe’s interest for borders to be permissive for “their” people to reach whatever destination they had chosen (mostly in the Americas). And during those years (only one or two generations before the current one) European leaders spoke of solidarity and compassion. In contrast, today facing the people who are coming in, Europe wants its external borders sealed and solidarity and compassion seem to have been forgotten. The current argumentation is not about how to help but about how to avoid resettlements of refugees in their constituencies.

It shows that the EU was never prepared for a large-scale migration like Syria. Unprepared to the huge inflow of asylum seekers, the European Union strongest strategy has been to reform its immigration policies and refugee laws making more difficult the access. The new laws have altered the reception of asylum seekers. Years ago migration to countries like Greece and Italy was significantly easier than migrating to Germany or Switzerland. Now, the EU has set up offices at every border displacing the main responsibility of control at the different entrance borders.

The situation is politically complex, but mainly morally challenging not for the political leaders but for every single citizen of any country in position to receive refugees. Local people may fear the arrival of migrants may lead to a draining of EU resources and adversely impact the job opportunities for the native Europeans, even when current figures do not support that idea. But in spite of those concerns, people should understand that the displacement is not going to stop and at some time Europe will need to deal with the fact that these people will continue to flee their countries of origin in spite of the awful risk of the journey and the high possibility of never reaching Europe. In the words of Eugenio Ambrosi (director of the IOM’s regional office for the EU, Norway and Switzerland): “We’re talking about thousands of people that move out of desperation. And if you’re desperate, yes, you might know that you’re going to risk your life or run into serious trouble, but you’re already in serious trouble back home so you have nothing to lose.”

So, as members of the civil society, citizens of every country must face the need of taking position in front of this challenge, avoiding the opinion clichés and the media manipulation. Europe (and some other well developed countries) has been always proud of itself as a leading defender of human rights. But now, the very same countries that are “donors” in humanitarian crises all over the world and that demand other countries to keep in the moral high ground, have to find the way of responding responsibly when they have a crisis at home. Increasingly during the last decades donors coming from different government agencies from the EU and individual European countries have increased the pressure on the humanitarian com-

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munity to improve their efficiency and accountability standards. Now it is time to ask themselves for a better job in terms of assistance and to adherence to the laws that they have always defended and pushed for less developed countries to observe.

A large number of people have entered Europe with a desperate need of an asylum. These vulnerable people require international protection and the EU is in the moral and legal position to do provide it. Reacting to this crisis by rejecting and denying the humanitarian dimension of the problem is not an acceptable answer for a continent with a long tradition of respect of the dignity of human beings and observation of human rights.

It means that, just as ordinary citizens, it is our responsibility to learn about the origin, consequences and dimension of the crisis and take position about that. It is our personal decision if our political leaders must receive or not the message that we must take the responsibility to provide services to those in need. Even in the imperfect democracies of the current times, we still live in democracy and so, political leaders cannot make interminable decisions against the will of the majority. The decisions they are going to make in the next future about the migrant crisis, we like it or not, are in our hands and are our responsibility. We cannot elude our own decisions.



*The views expressed in this article are those of the author and do not necessarily reflect the official positions of the Executive Board or International Board of Regents of the WABIP. Dr. Silvia Quadrelli is Vice-chair of the WABIP.

Education and Training

High Tech in Melbourne, Australia, 2018

February 2018 marked another important step forward in the history of WABIP-cosponsored Train the Trainer seminars. In partnership with TSANZ and Olympus Australia, a Train-the-Trainer program and Introduction to Flexible Bronchoscopy seminar was conducted at Olympus Headquarters in Glen Waverly, just at the outskirts of Melbourne, Australia. Guided by host organizer Dan Steinfert, and with assistant instructors Jon Williamson (Liverpool), Elaine Yap (Auckland), and Matt Salamonson (Perth), two and a half days were dedicated to learning how to implement competency-oriented instruments such as checklists and bronchoscopy assessment tools (BSTAT, BSAT, and Step-by Step) into a pulmonary training program. These tools are now part of competency-based education in Australia and New Zealand.

An exciting new session included Anatomy of a Bronchoscopy Suite. Jon Williamson conducted this captivating, interactive session with participants as they discussed equipment, instruments, personnel, organization, and access to a dedicated emergency box in order to respond swiftly and effectively to bronchoscopy-related complications. Other times during the course, simulators were employed to practice step-by-step bronchial inspection (including Laerdal, Symbionix, and TruCorp models). Two-to-one learner/teacher ratios allowed hours of individualized instruction, enhanced by the use of visionary glass markerboards and ample time to develop neural pathways learning bronchoscopy on an iPad (BronchPilot™ Anatomy available free for download from the apple store).

On a personal note, I want to thank all my colleagues down under, and I can say with confidence that Aussies and Kiwi bronchoscopists (Australia and New Zealand) are at the forefront of our times, changing the educational paradigm and revolutionizing bronchoscopy training. Not only are assessment tools and checklists being officially introduced into national training programs and competency assessments, but new guidelines are also being accepted regarding pleural disease education (see the new ICC-STAT and UG-STAT assessment tools*, both available for download on the www.Bronchoscopy.org website). Case-based exercises using the Practical Approach method are being used in many centers to effectively assess not only what trainees know, but also how trainees think as they gain skills, knowledge and experience, and most everyone agrees that breaking bronchoscopy down into separate steps allows rapid acquisition of technical skills without endangering patients or unnecessarily prolonging procedures.

And of course, a big thank you to Natasha Botvinik and the entire Olympus Australia team, and to our many Aussi and Kiwi trainers, and to all the young people who enthusiastically contributed to the success of this program. Next stop...a Train-the-Trainer program in Auckland, New Zealand!

*Intercostal Catheter Skills and Tasks Assessment Tool. Ultrasound-Guidance (thoracentesis) Skills and Task Assessment Tool.

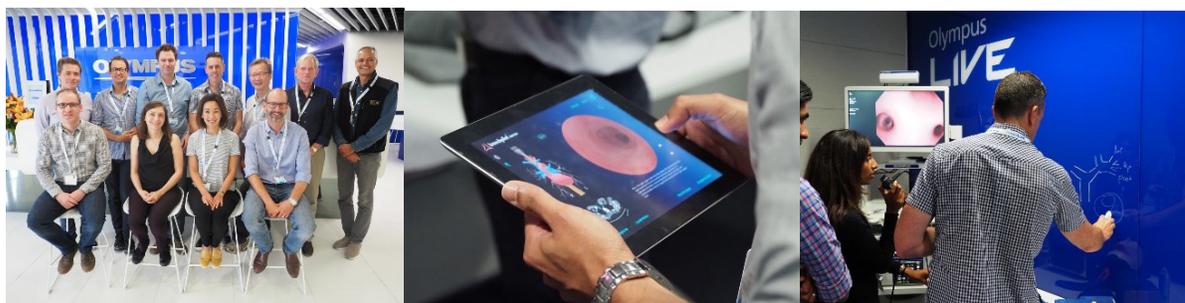


Figure 1A: Physician trainers in Melbourne, Australia. **Figure 1B:** iPad-based BronchPilot Anatomy™ and magic marker-board



Figure 2: Congratulations to everyone who participated in the Train-the-Trainer and Introduction to Flexible Bronchoscopy course held in Melbourne, Australia, 2018.

WABIP Visiting Scholar Grant – We are excited to announce the all new WABIP Visiting Scholar Grant, whose first recipient is Dr. Omer Elhag, WABIP Regent from Sudan. This grant provided support to Dr. Elhag to complete EBUS and conventional TBNA training as part of a Sudanese nationally supported program to expand lung cancer diagnosis and management.



Dr Elhag is an opinion leader in Sudan and department head of a major university teaching hospital in Khartoum. His credentials include a medical doctorate degree from the University of Cluj, Romania. As part of the WABIP visiting scholars grant, Omer returned to Romania from March 24, 2018 to April 20, 2018. Under the tutelage of Dr. Mariaora Simon, he completed a structured Bronchoscopy International curriculum that included reading and analysis of The Essential cTBNA Bronchoscopist, the Essential EBUS Bronchoscopist, coached practical approach exercises, analytical review of EBUS-related teaching videos available from the BronchOrg YouTube channel, training in cytology and specimen/smear preparation, commentary of the WABIP podcast on small samples in lung cancer, and numerous hours of

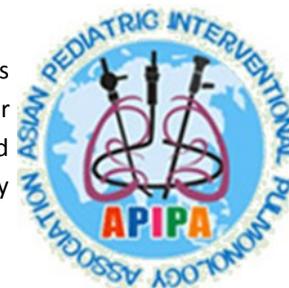
hands-on training using models, then live clinical cases after achieving 100 percent technical skill scores using assessment tools such as EBUS-STAT.

Furthermore, Omer assisted with preparations for a first hands-on EBUS training course in Romania, addressing endobronchial ultrasound physics, equipment (processors, bronchoscopes, needles, radial and linear array transducers), diagnosis and mediastinal staging, Bronchoscopy skills and techniques, anatomy, lung cancer classification according to universally accepted IASLC guidelines, clinical case analyses, and EBUS-CT-White light bronchoscopy correlations.

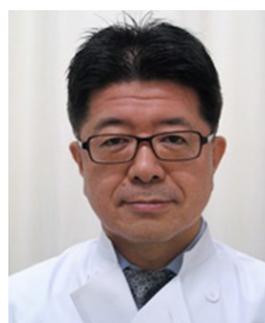
Having returned to the Sudan, Dr. Elhag can share his new knowledge and expertise with his colleagues in his country, expanding clinical care and serving patients with greater skill and competence. Many congratulations to Dr. Elhag for building a strong foundation of knowledge and clinical expertise that will help hundreds of patients and advance interventional pulmonology in Sudan.



New Member Society – It is our honor and pleasure to welcome Dr. Liu Xicheng and colleagues as members of the *Asian Pediatric Interventional Pulmonology Association* (APIPA), newly joined member society of the WABIP. The APIPA has just completed its first congress in China to great success (read more about it [here](#)). We would like congratulate Dr. Xicheng on this step to improve the respiratory health of children in Asia and the world.



New Board of Regents Members – Please welcome new board members, pictured left to right, Dr. Shaheen Islam (AABIP – USA), Dr. Kiyoshi Shibuya (APAB – Japan), and Dr. Shah Shirish Piyushkant (IAB – India). We are honored and delighted to have these 3 new members on our Board of Regents, which now has 62 members from over 30 countries around the world.





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Research

The Marriage of Navigation Bronchoscopy and Ablative Therapies for Peripheral Lung Cancers: You All Are Invited

Rapid progress in technologies to access peripheral pulmonary nodules including navigation bronchoscopy, robotic navigation, radial ultrasound, and trans parenchymal approach has made trans-bronchial biopsies much safer and more effective and compared to just a few years ago.

Ablative therapies have come a long way as well. Therapies with extensive experiences in other organs and newer modalities with a short but robust track record of safety and efficacy are all converging towards the lung cancer, the most deadly cancer known to men.

In the recent years, increasing numbers of early-stage lung cancers are being discovered, thanks to lung cancer screening programs across the world. A large proportion of these patients are deemed poor surgical candidates due to severe co-morbidities despite having a good potential for “cure” by surgical resection. Currently, the standard of care for such patients is stereotactic body radiation therapy (SBRT).

Navigation bronchoscopy combined with ablative therapies for the treatment of peripheral lung cancer has been undergoing extensive testing around the globe. It's a conceivable that this combination might offer multiple therapeutic options besides SBRT for non-surgical, early stage lung cancer patients. These options would be minimally invasive, single application, and probably cheaper than SBRT. .

Recently a small study from Japan (1) showed that bronchoscopic treatment of peripheral non-small cell carcinoma in poor surgical candidates with Radiofrequency Ablation (RFA) allowed progression-free survival in more than 80% of the patients at one year and median progression-free survival of almost 3 years. No major early or delayed complications were reported. In this study, the navigation and localization of the lesion were achieved by CT scanning.

Another such animal trial (2) was recently published describing the safety and efficacy of Photo Dynamic Therapy (PDT) in the treatment of primary lung cancer in a canine model using navigation bronchoscopy. Multiple dogs with biopsy-proven primary lung cancer were treated with Diode laser in Photophyrin sensitized tumors, PDT. The tumors were resected after one week to study the effects of treatment on the tumor and the surrounding healthy lung tissue. Authors reported no acute or chronic significant side effects and success in the tumor ablation in the prescribed range of the laser from the tip of the probe/catheter “kill zone.” Healthy lung showed mild inflammation easily treated with a short course of steroids.

In another study (3), 50 patients with peripheral pulmonary malignancies were treated with percutaneous microwave ablation using CT guidance for location. The results of this study suggest that lesions less than 3 cm and more than 3 cm responded equally well to the microwave ablation technique with a 1-year survival of 83%, 2-year survival of 73%, and 3-year survival of 61%. Approximately 20% of the patients had residual disease after the initial ablation though.

Such studies show the relentless progress in Interventional Pulmonology carrying the promise to utilize cutting-edge navigational and localization modalities with ablative therapies in opening up new doors to novel, minimally invasive, and personalized therapies for one of the deadliest disease facing the humanity.

Research

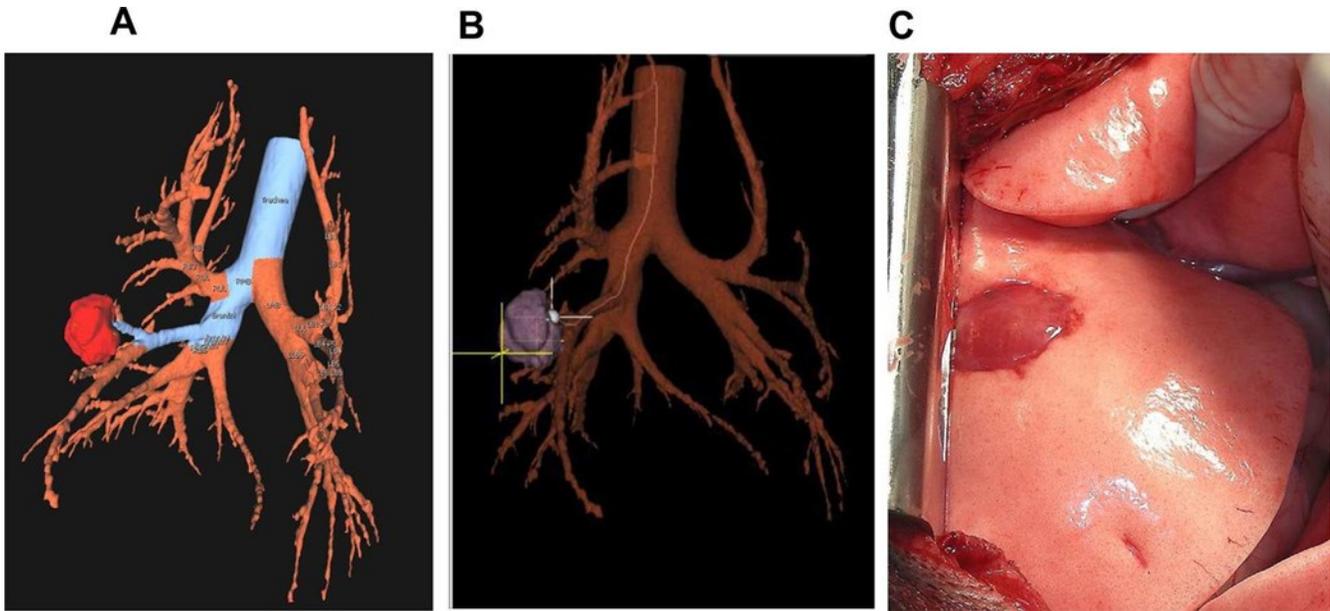


Figure 1: (A and B): Computer-generated images of the bronchial tree of Dog 1 developed by the electromagnetic navigational system (Veran Navigation Systems). The images also show the tumor shape and location (in red in A). B shows the route taken by the bronchoscopy probe and one of the final locations of the optical fiber used to irradiate the tumor. (C) Photograph taken during surgical excision of the right caudal lobe of Dog 1 at 1 week after PDT. The tumor is clearly visible.

References:

1. Xie et al. *Respiration*. 2017. 94(3):293-298
2. Musani et al. *Lasers Surg Med*. 2018 . Feb 5. doi: 10.1002/lsm.22781. [Epub ahead of print]
3. Farrah et al. *Radiology*. 2008. 247(3):871-9.

1ST INDONESIA PEDIATRIC INTERVENTIONAL BRONCHOSCOPY SCIENTIFIC MEETING

Pediatric interventional bronchoscopy in Indonesia is still considered as a new procedure. In order to establish and improve skill and knowledge on this field, we held 1st Indonesian pediatric interventional bronchoscopy scientific meeting on March 22-24, 2018 in Jakarta. First activity was pediatric interventional bronchoscopy workshop which was conducted on March 22nd in Cipto Mangunkusumo Hospital, a national referral hospital in Indonesia. Cipto Mangunkusumo hospital is an academic university based hospital in collaboration with Faculty of Medicine Universitas Indonesia and serve as a training and educational centre for medical students, residents and trainees. This workshop was endorsed by World Association Bronchology and Interventional Bronchoscopy (WABIP), especially the pediatric section. On March 23rd, The webinar (online symposia) about integrated bronchoscopy services in Cipto mangunkusumo hospital was held. It was a collaboration symposia of pediatric pulmonologist, adult pulmonologist, Otorhinolaryngologist and guest speaker (chairman of pediatric section of WABIP) . The webinar was broadcasted from Cipto Mangunkusumo hospital across the country so that other hospitals and colleagues from other islands could join the sessions. On March 24th, in conjunction with Jakarta International Chest and Critical Care Medicine Congress, a topic of pediatric interventional bronchoscopy was delivered in plenary session. In the afternoon, a pediatric hands on workshop of interventional bronchoscopy was performed.

Day 1 (March 22nd ,2018) : Pediatric Interventional Bronchoscopy Workshop

The workshop was opened by the representative of educational and training director of Cipto Mangunkusumo hospital, Dr Anwarul Amin. A short introduction of the workshop was delivered by Dr Wahyuni Indawati as a course director then proceed to case presentation for live demonstration procedure. After that, live demonstration procedure of application of cryotherapy and argon plasma coagulation (APC) was performed. A case of recurrent papilloma larynx in 7 years old girl who had fully obliterated supraglottic, glottic and subglottic area above the tracheostomy canule as well as in the trachea just below the tracheostomy canule was extirpated using cryotherapy and APC. The procedure was done by Prof Mohammad Ashkan Moslehi which the audience saw it in realtime through livestreaming room. Prof Moslehi explained step by step about the procedure of using cryotherapy and APC in managing the intraluminal mass.

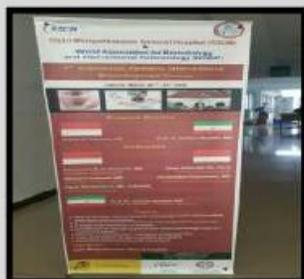


Figure 1 Schedule For The Event



Figure 2 Opening Speech From Representative Of Director for Educational And Training in Cipto Mangunkusumo Hospital



Figure 3 Opening Speech From Head Of Respirology Division Pediatric Departement Of Cipto Mangunkusumo Hospital



Figure 4 Dr Wahyuni presented the Case for Live Procedure Demonstration



Figure 5 The Live Demonstration of Cryotherapy and Argon Plasma Coagulation (APC) Procedure



Figure 6 The Team of Live Demonstration

After the break, lecture sessions was began with “How to Develop Interventional Bronchoscopy Center (Lesson Learnt From Adult Pulmonologist)” which was presented by Dr Ceva W Pitoyo. Dr Elvie Zulka from Otorhinolaryngology Department spoke about “Foreign Body Extraction in Children”. The topic of “Anesthesia technique in Pediatric Interventional Bronchoscopy” was delivered by Dr Bintang from Anaesthesiology Department. Afterwards Prof Moslehi gave enlightenment about “Cryotherapy in managing granulation tissue and foreign body extraction in Children” and proceed by lecture on “The role of ballooning in managing airway stenosis”. The attendees were hospital staff from multidepartment as well as residents and trainees and also pediatric pulmonologist from other part of Indonesia such as West Sumatra, South Sumatra and South Sulawesi.



Figure 7 Prof Moslehi spoke About Cryotherapy in Man aging Granulation Tissue and ForeignBody Extraction in Children



Figure 8 Speakers of The Course



Figure 9 Observation Room For Live Demonstration



Figure 10 Participants of The Course

Day 2 (March 23rd, 2018) : Webinar on Integrated Bronchoscopy services in Cipto Mangunkusumo Hospital

The second day was started by online symposia (webinar) which was chaired by Dr Wahyuni Indawati. There were 4 topics in this session, “The role of bronchoscopy in pediatric respiratory cases” was delivered by Dr Darmawan B Setyanto as Head of Respirology Division Child Health Department Cipto Mangunkusumo hospital. Afterwards Dr Ceva W Pitoyo, Head of Respirology and Critical Care of Department Internal Medicine spoke about “Current Practice of Adult Interventional Bronchoscopy”. Prof Moslehi as our honoured guest gave lecture on “The Present and Future for Pediatric Interventional Bronchoscopy”. The fourth topic about “Challenges of Foreign Body Extraction in Children” was presented by Dr Rahmanofa Yunizaf from Otorhinolaryngology Department.

The session was broadcasted across the country thus allowed other hospitals and colleagues from other island of Indonesia actively participated. Pediatric pulmonologist from Jakarta, Palembang (South Sumatra), Padang (West Sumatra) and so on were asking questions interactively during the session.



Figure 11 The Speakers for Online Symposia “The Role of Bronchoscopy Services in Cipto Mangunkusumo Hospital”



Figure 12 Online Symposia (Webinar) “The Role of Bronchoscopy Services in Cipto Mangunkusumo Hospital”



Figure 13 Online Participants from Other Hospital

Day 3 (March 24th ,2018) : Jakarta International Chest and Critical Care Medicine (JICCIM) Congress

In plenary session of the 6Th JICCIM in Raffles hotel, Jakarta, Prof Moslehi Introduced “Pediatric Interventional Bronchoscopy : Where are we now?”. In the afternoon session, Dr Wahyuni and Prof Moslehi conducted hands on session on pediatric interventional bronchoscopy. First Dr Wahyuni started with Hands on session of “Practical Points to Drive Flexible Bronchoscope” and then continued by Prof Moslehi about “The Application of Cryotherapy, APC and Balloning Procedures in Pediatric Setting”. The participants were pediatric pulmonologists from all over the country such as Jakarta, East Java, West Sumatra, South Sumatra, South Sulawesi, North Sulawesi, Jogjakarta, North Sumatra and West Nusa Tenggara. All participants were actively involved and directly supervised during hands on using the bronchoscopy model. The session was wrapped up with group photo and the spirit of continuing to elaborate and improve skills and knowledge on pediatric interventional bronchoscopy. Special regards to our honourable guest Prof Moslehi for the willingness of sharing his experiences and knowledge. The last but not least we also thank to our partner Setio Harto (Olympus Indonesia) and Erbe company for the support of this workshop.



Figure 14 Prof Moslehi Spoke About "Pediatric Interventional Bronchoscopy: Where Are We Now?" in JICCIM 2018



Figure 15 Prof Moslehi and Dr Wahyuni with Dr Gurmeet Singh, Head Of Organizing Committee JICCIM 2018



Figure 16 The Equipment for Hands on Session on Pediatric Interventional Bronchoscopy



Figure 17 Dr Wahyuni Demonstrated for Hands on Session of "Practical Points to Drive Flexible Bronchoscope"



Figure 18 Prof Moslehi Demonstrated for Hands on Session of "The Application of Cryotherapy, APC, and Balloning Procedures in Pediatric Setting"



Figure 19 The Course Participants Performed in the Hands on Session



Figure 20 Prof Moslehi Supervised One of the Participants on Hands on Session



Figure 21 Photo Group With Bronchoscopy Nurses



Figure 22 Photo Group With The Participants

This 1st Indonesian Pediatric Interventional Bronchoscopy Scientific Meeting is the first platform for Indonesian pediatric pulmonologist to move forward in the future for better practices in respiratory medicine. Collaboration with other society in the world and region will be expected to strengthen the scientific part as well as transfer of skill. (Jakarta, March 31st 2018, WI)



Figure 19 Cipto Mangunkusumo National Hospital



Figure 20 Kiara Maternal and Child Health Center at Cipto Mangunkusumo National Hospital

1st Congress Of Asian Pediatric Interventional Pulmonology Association (APIPA)



1st Congress Of Asian Pediatric Interventional Pulmonology Association (APIPA) was held on March 16th to 18th, 2018 in Shangri-La Hotel, Jinan, China. On March 16th, the congress opened at 8:00 am, in an exotic and beautiful scene of different countries. Prof Liu Xicheng from Beijing Children’s Hospital, the first Chair of APIPA, read the rules and regulations of APIPA. The aim of APIPA: To serve the world children with bronchoscopy and intervention. The mission of APIPA is to promote knowledge and understanding of pediatric interventional bronchoscopy procedures in order to improve the respiratory health of children in Asia and further the world. To achieve these goals, APIPA was established and provides a solitary pediatric platform for study and interaction. The attendees included colleagues from pediatric respiratory, intensive medicine, neonatal, cardiothoracic surgery, anaesthesia, ENT department, et al. Other than Chinese colleagues, there were doctors from India, Bangladesh, Malaysia, South Africa, et al. It’s an great event for Asian pediatric interventional pulmonology.



Group Photo of 1st Congress of APIPA

Opening ceremony guests included Prof Mohammad Ashkan Moslehi from Shiraz University School of Medicine, Iran and Chair of pediatric section of WABIP, Director Li Fang from Talent Exchange Service Center Of Endoscopic Diagnostic And Therapeutic Technology Project Office, China National Health And Family Planning Commission, prof Liu Xicheng from Beijing Children’s Hospital and the first Chair of APIPA, prof Kopen Wang from Baltimore Union Memorial Hospital, USA, prof Lorenzo Mirabile from Meyer Children’s Hospital, Italy, prof Hugo Botto from Garrahan Children’s Hospital, GaiZhongtao, Chair of Qilu Children's Hospital of Shandong University, Zhang Yunkui, President of Qilu Children's Hospital of Shandong University, prof Meng Chen from Qilu Children's Hospital of Shandong University.



Section 1: Diagnostic And Therapeutic Development Of Pediatric Respiratory Endoscopy

Prof Liu Xicheng gave a lecture of "Pediatric Respiratory Endoscopic Development Status In China", focus on Chinese pediatric respiratory endoscopy for more than 20 years of development, developing all kinds of endoscopic technology and Chinese government paying much attention to standard training of pediatric interventional pulmonologists, this field is very promising. Prof Hugo Botto spoke of "Diagnostic And Therapeutic Development Of Pediatric Laryngomalacia", including pathogenesis, clinical manifestations, the effects of growth and development of children and interventional therapeutic methods, and he also showed the process of interventional therapy via real video. Prof Lorenzo Mirabile gave a lecture of "Airway Stenting In Tracheobronchial Disease ", including updated status of children's airway disease in Italy, implications and preventions for complications of airway stenting, with video showing the process of stent placement. The wonderful lecture won warm applause. Prof Mohammad Ashkan Moslehi spoke on "Lung Biopsy With Cryoprobe In Pediatrics", he illuminated the technical principle and advantage of cryotherapy, stressing that bronchoscopy and intervention full of challenge and was the inevitable direction of discipline development. Prof Kopen Wang introduced in detail about orientation, puncture method and points for attention when performing TBNA, he also shared some ideas in equipment improvement. His presentation fully reflected continuous innovation was very important in the work of interventional pulmonology.



Section 2: Respiratory Endoscopy and Multidisciplinary Collaboration

The development of pediatric pulmonary rehabilitation is important for the psychosomatic health of children with severe and chronic lung disease. Prof Yu Pengming from Huaxi Medical School Of Sichuan University, explained that children's lung were different from adults in physiology and anatomy, requiring more observation, accumulation of experience, cooperation of children and parents, and completed lung rehabilitation therapy during playing. Prof Wen Hongmei from Third Hospital Affiliated To Zhongshan University, showed the experience in adult patients in her presentation of "Endoscopic Evaluation Of Pediatric Dysphagia", so that we could understand more about dysphagia in pediatrics. Prof Wan Guifang from Third Hospital Affiliated To Zhongshan University, gave a lecture of "Evaluation And Management Of Dysphagia In Pediatrics", stressing the swallow involve multiple cooperative work of respiratory system, digestive system, et al, finding underlying cause via evaluation and preventing aspiration by regulated food.



Multidisciplinary collaborative team from Qilu Children's Hospital of Shandong University, consisting of respiratory interventional physician prof Meng, anesthetist Dr. Wang Shaochao, cardiac surgeon prof FengZhiyu, thoracic surgeon prof Wu Yurui, nurse RenJinlu, together introduced their experience in managing refractory airway diseases, such as tracheoesophageal fistula, tracheal stenosis due to vascular ring, infancy congenital airway deformities, difficult airway for intubation and so on. ICU physician Prof Tang Yuanping and cardiac surgeon prof Sun Shanquan, both from Guangdong Provincial Maternal And Child-Care Hospital, introduced their experience in the treatment of airway malformation of small infants. Excellent cases report, unique teaching method and visualized operation video, made the participants fully realize that multidisciplinary collaboration has unlimited prospects.



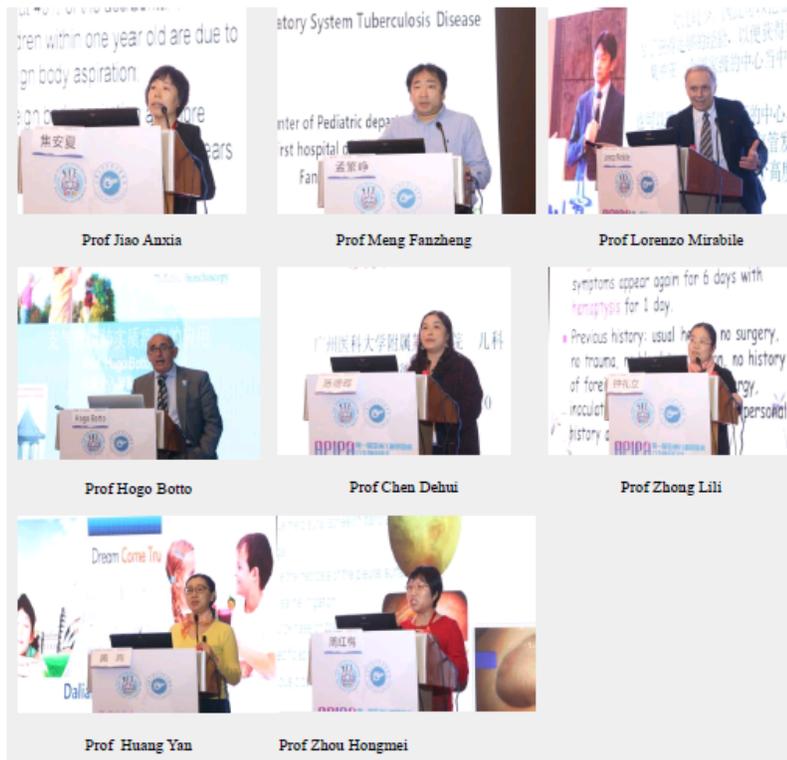
Section 3: Team Building Of Pediatric Respiratory Endoscopy

Prof Meng Chen, prof Hugo Botto, prof Lorenzo Mirabile and prof Mohammad AshkanMoslehi, respectively introduced pediatric respiratory endoscopic team building in China, Argentina, Italy and Iran, made everybody know the development of pediatric respiratory endoscopy in these countries.



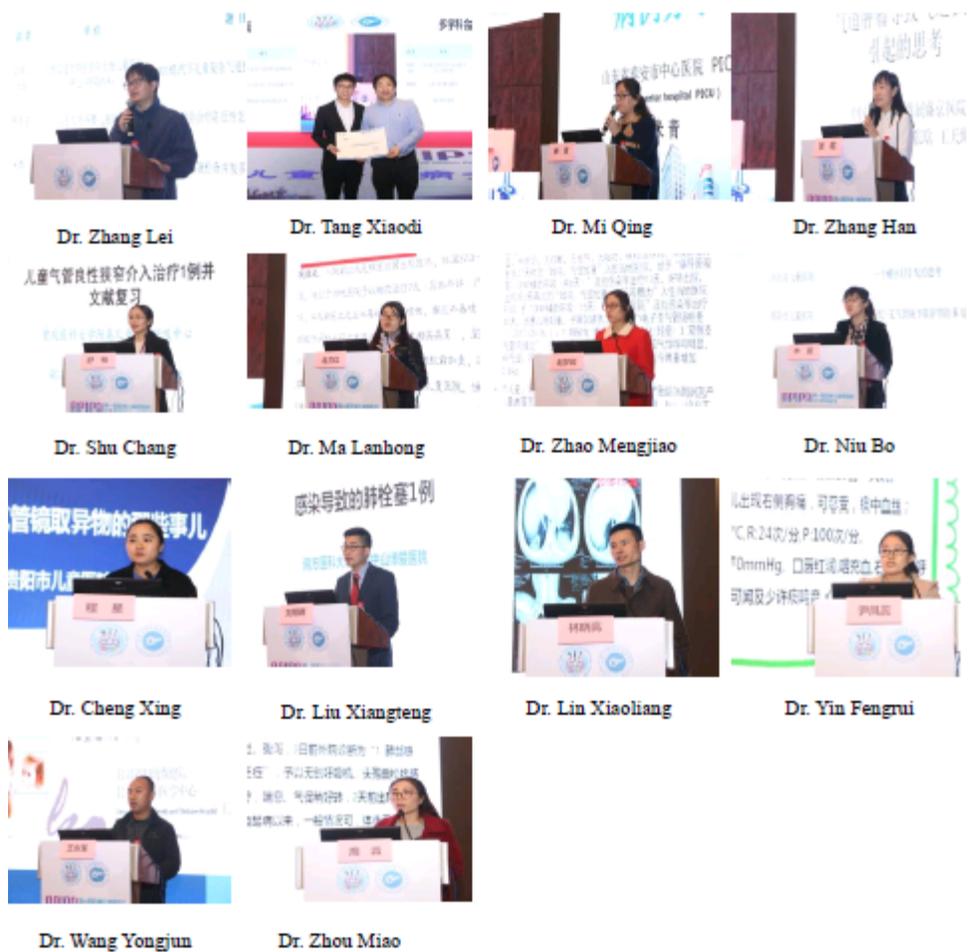
Section 4 : Clinical Application Of Pediatric Respiratory Endoscopy

Airway foreign bodies are one of the most common work for pediatric respiratory endoscopy. In "Exciting Stories In Foreign Bodies Removal", Prof Jiao Anxia from Beijing Children's Hospital, told a variety of thrilling stories. Prof MengFanzheng from First Hospital Of Jilin University, spoke of "The Value Of Respiratory Endoscopy In Respiratory Tuberculosis", suggested that endoscopy was very important in the diagnosis and treatment of respiratory tuberculosis, and could reduce misdiagnosis and missed diagnosis. Prof Lorenzo Mirabile, gave lectures of "Category And Treatment Of Children's Laryngeal Cysts""Pay Attention To Pediatric Laryngopharyngeal Reflux", making the attendees understand pediatric laryngeal diseases more. Prof Hugo Botto, spoke of "Rigid Bronchoscopy In Pediatrics". Prof Chen Dehui from First Hospital Affiliated To Guangzhou Medical University, stressed the importance of early endoscopic intervention in her presentation "Time Of Endoscopic Treatment For Severe Pneumonia Complicated With Atelectasis". In the presentation of "Missed Diagnosis Of Pediatric Pulmonary Vascular Diseases", prof ZhongLili fromHunan Provincial People's Hospital, reminded that respiratory disease included not only tracheobronchial, pulmonary and pleural diseases, but also pulmonary vascular diseases, which requiring more attention. Prof Huang Yan from Dalian Children's Hospital suggested to standardize administration of pediatric respiratory endoscopy so as to guarantee medical safety. Prof Zhou Hongmei from Zhongshan Hospital Affiliated To Guangdong Medical University, spoke of "Time Of Medical Thoracoscopy For Empyema And Prevention Of Complications", indicated the importance of pediatric thoracoscopy.



Section 5: Case Reports

More than a dozen pediatricians shared their wonderful cases of success or failure in their respective hospitals. They are Dr. Mi Qing from Taian Central Hospital, Dr. Niu Bo from Hebei Children's Hospital, Dr. Liu Xiangteng from ZhongshanBoai Hospital Affiliated To Southern Medical University, Dr. Zhang Lei from Shanghai Children's Medical Center, Dr. Zhang Han from Shengjing Hospital Affiliated To China Medical University, Dr. Lin Xiaoliang from First Hospital Affiliated To Xiamen University, Dr. Yin Fengrui from Chifeng Municipal Hospital, Dr. Cheng Xing from Guiyang Children's Hospital, Dr. Tang Xiaodi and Zhao Mengjiao from Qilu Children's Hospital Of Shandong University, Dr. Shu Chang from Children's Hospital Of Chongqing Medical University, Dr. Ma Lanhong from People's Hospital of Xinjiang Uygur Autonomous Region, Dr. Wang Yongjun from Gansu Provincial Maternity And Child-Care Hospital, Dr. Zhou Miao from Hunan Provincial People's Hospital. Pediatric interventional pulmonology continuously involved talented people!



Section 6: Hands-on Workshop

As one of the highlights of this session, there were many attendees in hands-on workshops. On the site, the teachers were full of energy in instructing, the learners were very active in learning. The content was very rich, including airway management, procedure of bronchoscopy, bronchoalveolar lavage, clamping, minimally invasive thoracentesis and drainage, bronchoscopic balloon dilatation, cryotherapy, electrocautery, argon plasma coagulation, laser, medical thoracoscopy. The program of nurses included washing, disinfection and maintenance of endoscope, cooperative work with practitioner, equipment preparation, application of forceps, balloon and ablation equipment. The attendees were able to feel the charm of endoscopy and intervention in silicone and animal models, live video transfer of operations.



Group photo



Live video transfer



Hands-on teaching by bronchoscopist



Hands-on teaching by bronchoscopic nurse



Hands-on teaching by bronchoscopic nurse



Hands-on teaching by bronchoscopist



Hands-on teaching by bronchoscopist



Hands-on teaching by bronchoscopic nurse



Hands-on teaching by bronchoscopist



Hands-on teaching by bronchoscopist



Hands-on teaching by bronchoscopist



Hands-on teaching by bronchoscopic nurse



Hands-on teaching by thoracoscopist



Hands-on teaching by bronchoscopist



Hands-on teaching by bronchoscopist

Asian Pediatric Interventional Pulmonology Association is the first setup jointly by the pediatric interventional pulmonologists in the world. It's the window of the development of Asian Pediatric Interventional Pulmonology. The establishment of the platform will certainly promote fully development of Asian Pediatric Interventional Pulmonology. We sincerely expect extensive exchanges and cooperation with the world colleagues on this platform, and together make APIPA congress a high level pediatric respiratory interventional event with worldwide influence.

WABIP ACADEMY- WEBCASTS

The WABIP has started a new education project recently: *THE WABIP ACADEMY*. The WABIP Academy will provide free online webcasts with new and hot topics that will interest pulmonologists and interventionalists.

Current webcast topic: **Tissue acquisition for biomarker directed therapy of NSCLC**

Webcast

Small Sample Tissue Acquisition and Processing for Diagnosis and Biomarker-driven Therapy of NSCLC

Welcome to WABIP's free online learning tool to increase knowledge regarding the appropriate selection, acquisition, and processing of cytology and histology samples from patients with known or suspected lung cancer.

Click an icon to begin

Program Description

Purpose

General Learning Objectives

Specific Learning Objectives

TABLE OF CONTENTS >

Each fictitious clinical case scenario is based on a conglomerate of real patient data. Cases have been modified to avoid any possibility for patient identification and to help meet educational objectives. Any resemblance to real persons, living or deceased, is purely coincidental.

The content for these webcasts has been developed by members of the World Association for Bronchology and Interventional Pulmonology. All content was reviewed by an independent multidisciplinary team of experts. Unless otherwise specified, all content is the property of WABIP.

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www.aabronchology.org	American Association for Bronchology and Interventional Pulmonology (AABIP)	www.ctsnet.org	The leading online resource of educational and scientific research information for cardiothoracic surgeons.
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		sites.google.com/site/asendoscopiarespiratoria/	Asociación Sudamericana de Endoscopia Respiratoria

UPCOMING EVENTS

PLEURALITY 2018

When: June 2-3, 2018

Where: Narayana Health City, Bengaluru, India

Program Director: Dr. Ranganatha

Program Type: Educational seminar (postgraduate may include physicians in practice and trainees), Hands-on workshop, Conference (didactic lectures)

1st International and 3rd Iranian National Congress of Lung Cancers and Interventional Pulmonology

When: June 20-22, 2018

Where: Milad Hospital, Isfahan, I.R.Iran

Program Director: Dr. Babak Amra, MD

Program Type: Educational seminar (for trainees only), Hands-on workshop, Conference (didactic lectures)

Website: <http://www.chestnet.ir>

Interventional Pulmonology and Pathology Through Clinical Practice

When: June 23, 2018

Where: Belgrade, Serbia

Program Director: Semra Bilaceroglu M.D., Marioara Simon M.D., Spasoje Popevic M.D.

Program Type: Educational seminar (postgraduate may include physicians in practice and trainees)
Conference (didactic lectures)

Website: <http://www.srbrespiratory.org/meetings.html>

Introduction to Bronchoscopy and Pulmonary Procedures Course

When: June 29, 2018

Where: Beth Israel Deaconess Medical Center, Boston, MA, USA

Program Director: Mihir Parikh, M.D.

Program Type: Educational seminar (for trainees only), Hands-on workshop

SingHealth DukeNUS Lung Centre Advanced Bronchoscopy & Pleuroscopy Course

When: July 4-7, 2018

Where: Academia, Singapore General Hospital, 20 College Road Singapore 169856

Program Director: Dr. Melvin Tay

Program Type: Education seminar, Hands-on workshop

Website: <https://www.facebook.com/lungcentre/>

UPCOMING EVENTS

EBUS and Advanced Diagnostic Bronchoscopy: The Seventh Year

When: July 25-27, 2018

Where: Hyatt Regency Chesapeake Bay, Cambridge, Maryland

Program Director: Lonny Yarmus, DO, FCCP, MD

Program Type: Educational seminar (postgraduate may include physicians in practice and trainees), Hands-on workshop, Conference (didactic lectures)

Website: <https://hopkinscme.cloud-cme.com/aph.aspx?P=5&EID=11444>

4th Annual Scientific Meeting of the Malaysian Association for Bronchology and Interventional Pulmonology

When: October 12-14, 2018

Where: MALAYSIA

Program Director: DR RAZUL MD NAZRI MD KASSIM

Program Type: Hands-on workshop, Conference (didactic lectures)

Website: <http://www.mabip.com>

Fifth Annual Percutaneous Tracheostomy and Advanced Airway Cadaver Course

When: October 22, 2018

Where: MISTC Lab, The Johns Hopkins Hospital, Baltimore, MD

Program Director: Hans Lee, MD

Program Type: Hands-on workshop, Conference (didactic lectures)

Website: <https://hopkinscme.cloud-cme.com/aph.aspx?P=5&EID=13574>

Ninth Annual Evaluation and Management of Pleural Disease

When: January 21-22, 2019

Where: The Johns Hopkins Hospital, Baltimore, MD

Program Director: David Feller-Kopman, MD, FCCP

Program Type: Hands-on workshop, Conference (didactic lectures)

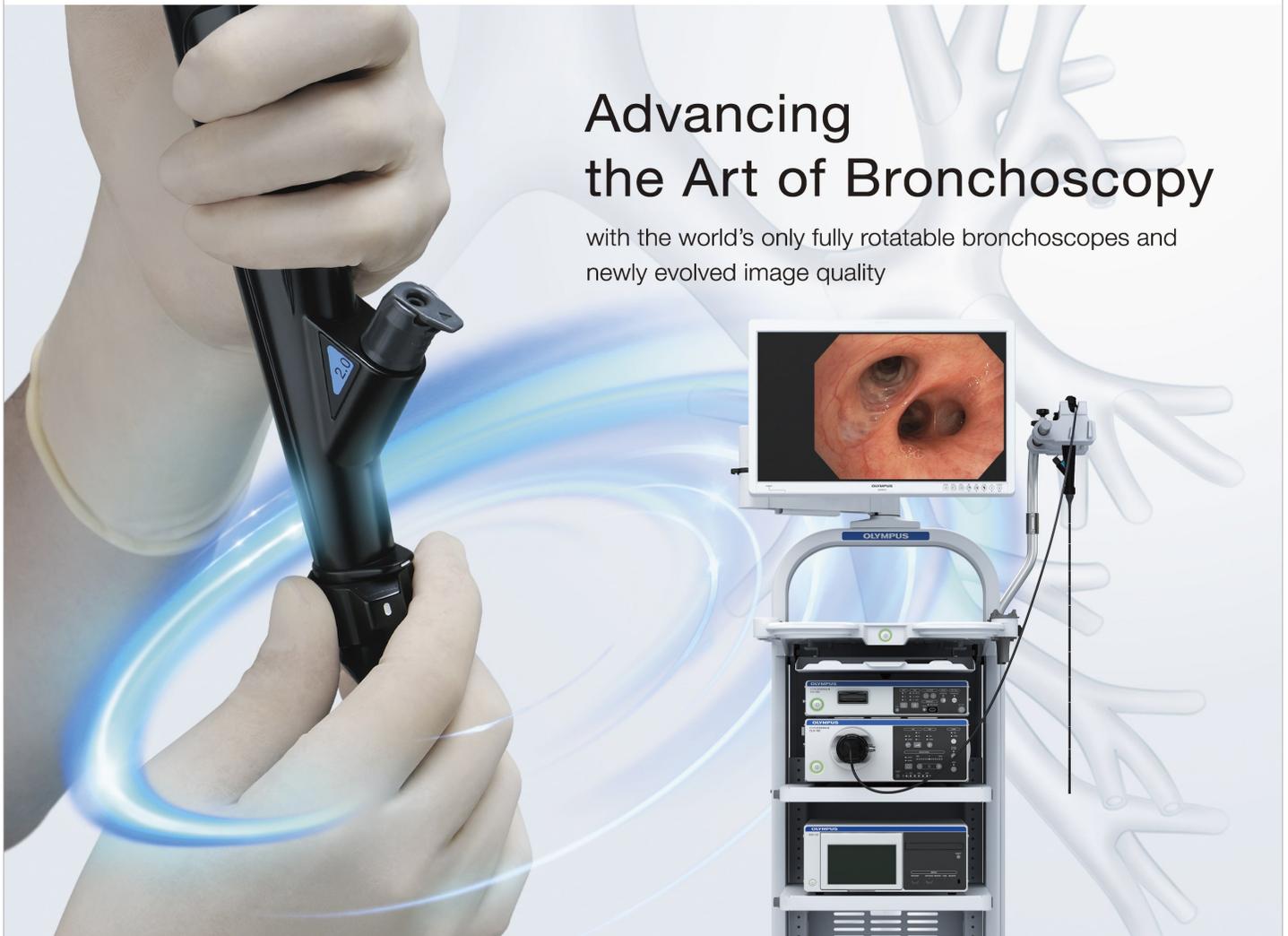
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*Data on File, 2016.
† Electromagnetic Navigation Bronchoscopy
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