WABIP Newsletter

Volume 02

Issue 03

September 2014

Inside This Issue

WABIP Newsletter

VOLUME 2, ISSUE 3 SEPTEMBER 2014

Opinion/Editorial

VATS to Robotics: Evolving technology in thoracic surgery

Since the first use of the cystoscope in the early twentieth century for the lysis of the pleural adhesion by Dr. Christian Jacobaeus, pleuroscopy/ thoracoscopy or video-assisted thoracoscopic surgery (VATS) has undergone a major change (1). It has evolved from basic procedures such as pleural biopsy and management of pleural effusions to complex thoracic surgeries. According to the Society of Thoracic Surgeons General Thoracic Surgery Database, 45% of pulmonary resections are performed by VATS (2). VATS is also used for other general thoracic surgeries such as mediastinal tumor resection, chest wall resection and esophagectomy. Compared to the traditional thoracotomy, VATS is associated with shorter length of stay in hospital, decreased postoperative pain and decreased complications (3). The advantages of VATS over thoracotomy have been well established in the past decade.

On the other hand, the use of robotics for minimally invasive surgery is still new compared to VATS. Currently, the only robotic surgical system clinically available is the da Vinci Surgical System (Intuitive Surgical; Sunnyvale, CA) which was approved in 2000 by the Food and Drug Administration. The system consists of a 4-armed robot positioned by the patient which is controlled by a console by the surgeon. Some of the technical limitations of VATS such as two-dimensional imaging and limited maneuverability of instrumentation has been addressed in the robotic system. The da Vinci allows three-dimensional, high-definition imaging with 7 degrees of freedom instrumentation. The robotic technology is now being used for a variety of complex cardiac, urologic and gynecologic procedures. It is also gaining momentum in thoracic surgery.

Robots are now being used for pulmonary resections, mediastinal surgeries and also for benign and malignant esophageal lesions. The major advantages of the robot compared with VATS include superior visualization controlled by the operator, high magnification, improved instrumentation which may allow surgeons do a better lymphadenectomy and the ability to teach using a dual console and the simulator. However, the disadvantages include the capital and maintenance costs, limited platform availability, the lack of ability to palpate the lung or haptic feedback and potentially longer setup time. The case volume for robotic pulmonary resections has increased significantly in the past 5 years and thoracic surgeons have been able to adopt the new technology safely and efficiently. The current literature shows that robotic pulmonary resection is associated with improved short-term outcomes compared with thoracotomy (4, 5). Although the data is limited, robotic pulmonary resection is associated with similar long-term outcomes for early-stage lung cancer compared with VATS and thoracotomy (6).

As the use of the robot increases among thoracic surgeons, it will be very important to continue to evaluate this technology systematically in terms of short-term as well as long-term outcomes and costs. Although limitations still exist, robotic surgery is attractive since it has capabilities to incorporate new technology such as fluorescence imaging, surgical stapling devices, and surgical energy devices into the robotic platform. The robotic technology is sure to evolve equipped with new technology in the years to come.

Editor in Chief

Kazuhiro Yasufuku

References:

1. Braimbridge MV. Ann Thorac Surg 1993; 56: 10-4
2. Ceppa DP et al. Ann Surg 2012; 256: 487-93
3. Paul S et al. J Thorac Cardiovasc Surg 2010; 139: 366-78
4. Cerfolio et al. J Thorac Cardiovasc Surg 2011; 142: 740-6
5. Kent M et al. Ann Thorac Surg 2014; 97: 236-42
6. Park BJ et al. J Thorac Cardiovasc Surg 2012; 143: 383-9

Technology Corner

Technology corner: Argon Plasma Coagulation for Therapeutic Bronchoscopy

Introduction: Contact and non-contact electrocautery (EC) has been applied bronchoscopically to coagulate bleeding lesions, assist with tumor debulking or facilitate mechanical dilatation of bronchial or tracheal strictures. Argon Plasma Coagulation (APC) is a non-contact form of EC used for selected cases of hemoptysis, and for facilitating bronchoscopic resection of a variety of endobronchial lesions. APC-induced tissue effects are affected by power setting, power density, duration of exposure, argon gas flow and water content. Knowledge of basic APC physics is warranted to assure desired effect and patient safety. This section will discuss the physics principles and indications of APC, and describes how this modality differs from lasers in terms of coagulation, vaporization and expected depth of penetration.
Background: APC, like any form of EC, has fundamentally different physics from lasers. With lasers, the electrons of some atoms are stimulated by external energy source to achieve a higher level of energy. When the electrons fall back to the normal level of energy, there is emission of energy in the form of photons. APC is a form of EC, in which the current passes from the electrode and completes the circuit through an electrical plate on the patient's skin. High frequency generators produce temperatures that change tissue structure and function. Current moves through the tissues, electrons collide with molecules, and cause dissipation of energy in the form of heat, proportionate to the duration of application, amount of energy and tissue resistance. Coagulation is achieved by heating tissues to approximately 70 degrees Celsius (°C). Vaporization usually starts at temperatures greater than 100 ° C and carbonization at temps > 200 °C. Forced coagulation (i. e. desiccation) is achieved with high voltage modulated currents (> 500V) while spray coagulation (fulguration) uses currents of > 2000 V. When used in a non-contact mode such as for APC, this latter mode leads to surface coagulation. In APC, the electrical arc between the electrode and the tissue is conducted via ionized argon gas continuously flowing from the tip of the probe. The usual settings for pulmonary applications include coagulation mode at max 45-60 Watts and gas flow of 0.3-1 L/min. Coagulation effect is superficial usually at 3 mm but varies depending on the power and duration of application. This form of EC is not used for cutting, and in fact, there is no risk of true cutting as the actual tip of the electrode is inside the distal aspect of the probe and not in the direct contact with the tissues. The distance between the tip of the probe and target tissue should be up to 5 mm and tissues must be conductive.

Clinical applications: APC energy can be applied via flexible or rigid bronchoscopy, depending on the fiber diameter, indication and operator's experience or preference. Clinical applications depend on the desired coagulation property and depth of penetration. As a general principle, APC has a shallower depth of penetration than lasers with a high absorption in proteins (Nd:YAG). Therefore, it allows for a limited penetration into tissues. The depth of penetration is similar to lasers with high absorption in water (Nd: YAP, Ho:YAG, CO2, Thulium) or hemoglobin (KTP). Deeper coagulation, however, may be necessary prior to resecting endobronchial tumors and thus a laser with deep penetration effects is preferable (eg. Nd:YAG, particularly at low power density)(1). The differences in electrical resistance among distinct tissue types make the depth of penetration and tissue necrosis less predictable than with lasers. APC has been used for debulking a variety of benign and malignant disorders (Figure). When used for this purpose, once the tissues become dehydrated or carbonized, they resist the electrical current flow, and the charred tissues must be removed with the forceps prior to continuing the process. Processes treated with APC include recurrent respiratory papilomatosis (2), granulation tissue (3), hemoptysis and malignant exophytic endoluminal obstruction (4). Bronchoscopic APC-related complications are rare but could include: argon gas embolism with potential cardiac and cerebral consequences, especially when APC is applied in a contained space (scope wedged in a segmental bronchus) (5), airway stent damage (when power settings > 40 W are used) and airway fires (when FiO2 > 0.4 is inadvertently applied during the procedure). In addition, circumferential airway application of any thermal energy including APC may result in the development of airway strictures.

Conclusions: APC for airway use requires understanding of basic physics and safety principles. These depend on tissue characteristics (eg. water content), APC settings (eg. power, flow) and operator-related factors (eg. probe-tissue distance, bursts duration). The goal of therapeutic APC use in the airway is to achieve the desired coagulation or vaporization effects while minimizing damage to normal structures.

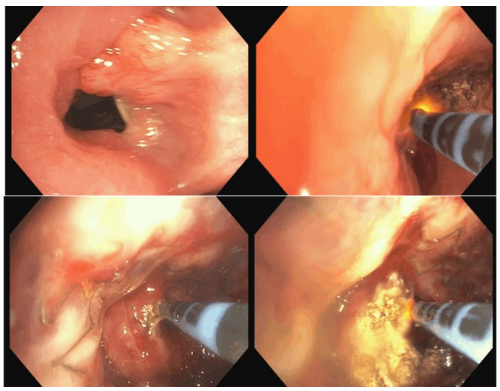

Figure 1: APC applications: tumor partially occluding the right mainstem bronchus before and during the APC treatment (top panel). Stent-related granulation tissue treated with APC (bottom panel). Note the charred tissue that develops during the APC application.

References:

1. Fisher JC. Lasers Surg Med 1983; 2:301–315
2. Bergler W et al. J Laryngol Otol. 1997;111:381-384
3. Colt HG. J Bronchol. 1998; 5:209-212
4. Morice RC et al. Chest 2001; 119:781-787
Reddy C et al. Chest 2008;134:1066-1069

Bin Hwangbo, M.D., Ph.D.
Pulmonologist
National Cancer Center, Goyang, South Korea

Transesophageal needle aspiration using a convex probe ultrasonic bronchoscope

Introduction: Endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) has been used in the diagnosis of mediastinal diseases and staging of lung cancer.1 However, the procedure is usually performed by gastroenterologists, and its use is not popular in the pulmonology field. Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) was introduced approximately a decade ago and has in large part replaced the role of EUS-FNA for mediastinal diseases.

Because of their different accessibility to the mediastinum, EBUS-TBNA and EUS-FNA are perceived as complementary in diagnosing mediastinal diseases. EBUS-TBNA can easily access mediastinal nodes around the large airway (mainly stations 2R, 2L, 4R, 4L, 7). EBUS-TBNA also can access a large part of N1 lymph nodes (10 R, 10 L, 11Rsuperior, 11Rinferior and 11L). EUS-FNA has limited ability to target pre-tracheal stations such as stations 2R and 4R, which are common targets for lung cancer staging. However, it can access the inferior mediastinum (stations 8, and 9) and some nodes at station 5 that are not accessible by EBUS-TBNA. The value of routine preoperative sampling of the CT and PET negative inferior mediastinal nodes, however, is questionable.

The EBUS-TBNA bronchoscope and the EUS-FNA endoscope share the same basic principles, and the major difference is the size of each scope (Figure 1). Feasibility, safety, and usefulness of transesophageal needle aspiration using a convex probe ultrasonic bronchoscope (EUS -with bronchoscope-FNA, EUS-B-FNA) have been published2-4.

Indications: From a technical standpoint, EUS-B-FNA can be used instead of conventional EUS-FNA, whenever EUS-FNA is indicated. EUS-B-FNA can reach nodal stations amenable to conventional EUS and lung parenchymal lesions abutting the esophagus2. For lung cancer staging, EUS-B-FNA can also be added to EBUS-TBNA. However, the use of EUS-B-FNA after examination with EBUS-TBNA has been shown to provide additional diagnostic information in lung cancer staging in a relatively small group of patients (2.9-6.7%) because of the high accessibility of EBUS-TBNA to the mediastinum3,4. The additional gain from EUS-B-FNA use has been observed when inaccessible (station 8, 9 and sometimes 5) or difficult locations by EBUS-TBNA are targeted(i.e. station 4L)3,4. EUS-B-FNA following EBUS-TBNA in mediastinal staging can be useful when lymph nodes are accessible only by EUS-B-FNA and when the status of the target can change the treatment plan. EUS-B-FNA alone seems to be not sufficient for mediastinal staging of operable lung cancer because of its limited accessibility to the mediastinum and relatively low diagnostic sensitivity (60.0%)4. In the combined use of EBUS-TBNA and EUS-B-FNA, an EBUS-centered procedure or EBUS alone is preferable in the mediastinal staging of lung cancer4.

EUS-B-FNA alone can be a good diagnostic method in the diagnosis of specific locations accessible by EUS but not in complete mediastinal staging. EUS-B-FNA was found to be a better-tolerated procedure than EBUS-TBNA in patients with poor cardiopulmonary conditions2. EUS-B-FNA can be readily coupled with bronchoscopic procedures when bronchoscopy is difficult due to severe cough, dyspnea, cardiac problems, or other conditions2. EUS-B-FNA in conjunction with bronchoscopy may reduce cost and time when EUS-FNA is needed following bronchoscopic procedures.

Planning: Potential target lesions are reviewed with computed tomography (CT) and/or positron emission tomography-CT (PET-CT) images prior the procedure. EUS-B-FNA is usually performed following bronchoscopy. We perform the procedure under conscious sedation (midazolam) with patients in a supine position. The oropharynx is sprayed with 4% or 10% lidocaine for bronchoscopy. After bronchoscopy, no additional local anesthesia is applied for EUS-B-FNA. To evaluate intraluminal lesions of the esophagus, a routine bronchoscope can be used by instilling air through the working channel of the bronchoscope, if an upper GI endoscope is not available. When EUS-B-FNA is used after EBUS-TBNA, the channel of the ultrasonic bronchoscope is flushed with 70% alcohol, and the surface of the bronchoscope is cleaned with alcohol after EBUS-TBNA. This is done in order to reduce bacterial contamination, even if some contamination is unavoidable when the bronchoscope is passed from the mouth to the pharynx during EUS-B-FNA.

Sampling: For EUS-B-FNA, the ultrasonic bronchoscope is introduced into the pharynx through the mouth and gently guided into the esophagus. We ask patients to swallow when the scope is inserted through the left hypopharynx. The bronchoscope is then gently maneuvered to find the target lesion in the esophagus by observing ultrasound images. The thyroid, aortic arch, left main pulmonary artery, heart, and descending aorta are the major landmarks used (Figure 2).

After the target lesion is identified, a needle set specific for the ultrasonic bronchoscope is inserted into the bronchoscope. The adjustment of the needle sheath can be difficult when the esophageal wall is collapsed around the bronchoscope. The aspiration procedure itself is almost the same as the one used for EBUS-TBNA. Due to the absence of bronchial cartilages, puncturing the esophageal wall is technically easier than puncturing the bronchial wall by EBUS-TBNA. A fast movement in inserting the needle though the esophagus is helpful because of the slippery esophageal wall. After inserting the needle into the target under ultrasound guidance, the stylet is removed, and suction is applied. The needle is manipulated within the lesion to collect samples. Suction is then removed, and the needle is retracted. For each target lesion, two to four transesophageal aspirations are usually performed. In most cases, the aspiration is performed with the balloon deflated. Samples are prepared in the same way that EBUS-TBNA samples are prepared. We collect samples from one lesion into 10% formalin solution to make a cellblock.

Quality control: Many bronchoscopists have not been trained in upper gastrointestinal endoscopic procedures and are not familiar with mediastinal ultrasound images observed from the esophagus. Dedicated training in transesophageal examination procedures is warranted. The contraindications for EUS-FNA use, such as a Zenker's diverticulum or bleeding tendency, should always be considered5. We do not perform EUS-B-FNA when esophageal lesions such as esophagitis or varices are observed on endoscopic images. The handling of samples from EUS-FNA is similar to that from EBUS-TBNA. The complication rate for EUS-FNA is low1. No serious complications have been reported for EUS-B-FNA2-4. According to the guidelines for EUS-FNA, prophylactic antibiotics are recommended when EUS-FNA is used for cystic lesions6. We use prophylactic antibiotics particularly for patients with cystic or necrotic lesions, immunocompromised status, or diabetes.

References:

Fritscher-Ravens A. Lung Cancer 2003; 41: 259–67
Hwangbo B, et al. Respirology 2009;14:843–9
Hwangbo B, et al. Chest 2010;138:795–802
Hwangbo B, et al. Thorax 2014; 69:261-8
Herth FJ, et al. Eur. Respir. J. 2006; 28: 1264–75
Polkowski M, et al. Endoscopy 2012;44:190-206

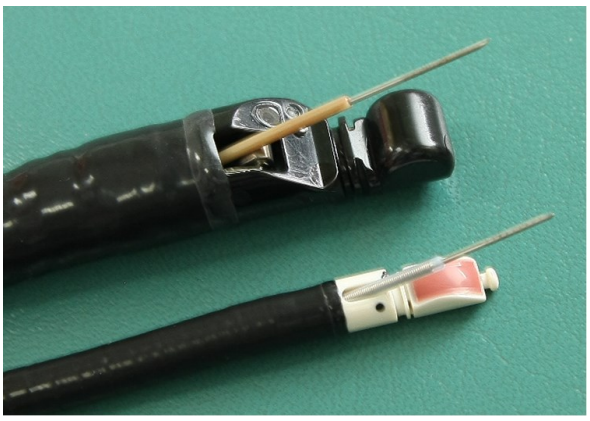

Figure 1: The linear ultrasonic endoscope (top, GFUCT2000-OL5, Olympus) and the ultrasonic bronchoscope (bottom, BF-UC260F-OL8, Olympus).

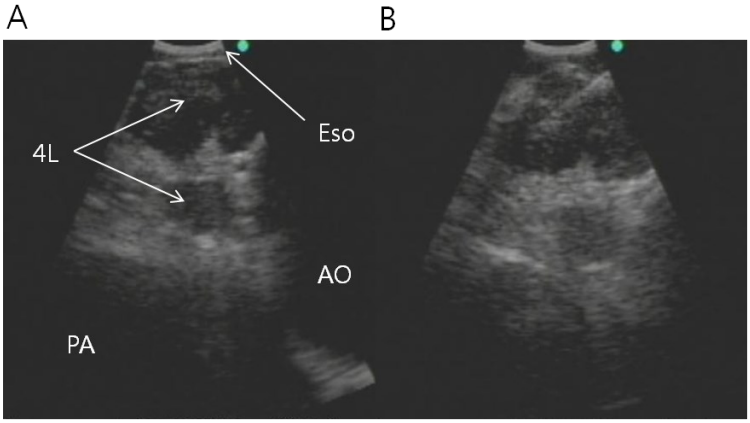

Figure 2: EUS-B-FNA on 4L lymph nodes. 4L lymph nodes are observed in the medial side of the aorto-pulmonary window (A). A needle is inserted into the 4L node (B).
AO: aortic arch, Eso.: esophageal wall, PA: pulmonary artery.

News of Humanitarian Activities

ITEM 1: The World Bronchology Foundation was able to announce its new officers at the World Congress in Kyoto. The Foundation includes: President Enrique Cases (Spain), Treasurer, Carlos Disdier (Spain), Vice-president, Silvia Quadrelli (Argentina), Vice-president, Domingo Perez (Paraguay), and (Spain), Vice-president, Eduardo De Miguel (Spain). The foundation thanks Dr. Pablo Diaz-Jimenez and Dr. Ramon-Rami-Porta for their services. Both physicians ended their terms on the Board of the WBF in 2014.

Figure 1: Drs. Henri Colt, Silvia Quadrelli, and Pablo Diaz with new WBF President and Treasurer Drs. Enrique Casas and Carlos Disdier (Standing behind Dr. Diaz-Jimenez).

Figure 2: Incoming Vice-President of the WBF, Dr. Domingo Perez Bejarano MD, MSc. Past President of Sociedad Paraguaya de Neumologia and Member of Asociación Sudamericana de Endoscopia Respiratoria.

ITEM 2: There is constant opportunity for WABIP members to contribute their time and energies to helping indigent populations in Guatemala. The Hospitalito Atitlan doesn't get many pulmonologist specialist volunteers but still has a need for any and all respiratory-medicine related supplies, including inhalers and other supplies. Life-threatening respiratory diseases affect many Maya families who cook on open fires in the home. The Hospitalito Atitlán in the highlands of Guatemala is the only hospital providing emergency care for 75,000 on the southern shores of Lake Atitlán. This hospital needs funding, and supplies to save lives, If you would like to help, please contact Henri Colt at the WABIP (henricolt@gmail.com), or you may contact Larry Finnegan (Amigos Hospitalito Atlitlan) directly at larryrsl@gmail.com.

Figure 3: Mother and child in the Hospitalito Atitlan, Guatemala.

Education and Training

ITEM 1: In June, 2014, The Peruvian Association for Bronchology and Interventional Pulmonology held an Introduction to Flexible Bronchoscopy Program using local trainers and Bronchoscopy Education Project Master Trainers from Argentina. The program was a great success, moving Peruvian bronchoscopists and physicians in training another step closer to competency in this important diagnostic and therapeutic procedure. The WABIP thanks The Pentax Company and their distributors for their support and assistance providing educational opportunities in Latin America.

ITEM 2: At the Kyoto World Congress, the series of WABIP Webcasts pertaining to small sample tissue acquisition for molecular markers and lung cancer was launched internationally. This webcast is permanently on the WABIP website server and can be accessed anytime from anywhere, including desktop, laptop computers and mobiles devices. The webcasts include three patient-centered scenarios, interactive multiple choice questions and answers, downloadable images and PowerPoint Slideshows, as well as video and audio-recorded commentaries from a multidisciplinary team of experts (Oncology, Thoracic Surgery, CytoPathology, Ethics and Palliative Care, and Interventional Pulmonology). A companion PDF file of each clinical scenario accompanies the webcasts, and can be downloaded from the website. The WABIP thanks everyone who contributed to this important educational project done in collaboration with Pfizer Oncology.

ITEM 3: From May 30 to June 2, a Bronchoscopy Education Project Faculty Development Program (train the trainers) was conducted in Athens, Greece. Hosted by Dr. Grigoris Stratakos, the program targeted trainers from Athens, all of whom have been active in bronchoscopy education. Participants also came from Hungary, Egypt, Turkey, and Romania. The program included interactive learning sessions, hands-on workshops, and role-playing exercises to help trainers gain skills using various teaching methodologies, bronchoscopy assessment tools and checklists, 4-box practical approach case-based exercises, and a more structure, uniform technique of bronchoscopy-related education. The program was sponsored by the WABIP and the Hellenic Thoracic Society.

Figure 1: Dr. Pedro Garcia-Mantilla, Chairman of the Peruvian Association (wearing blue necktie) sitting next to Ms Carmen Espinoza, representative of Pentax Distributors (TECNASA Company)

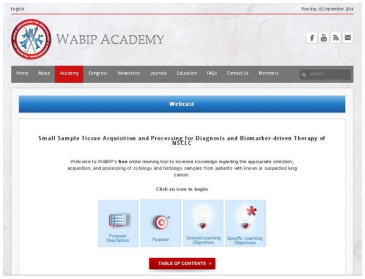

Figure 2: Screen shot of webcast page on the new WABIP Academy webpage at www.wabip.com

Figure 3: Faculty participants of the Athens WABIP Train the Trainers Program

Research

Bronchoscopic Interventions Can Save the Day for Patients with Broncho-Pleural Fistula!

Broncho-Pleural Fistula (BPF) is an uncommon yet frustrating medical and surgical problem. Often a post-surgical complication but spontaneous development is not that uncommon either.

Regardless of the etiology, it's the underlying pathology of lung that makes BPF so recalcitrant to spontaneous healing and surgical repair alike.

Interventional Pulmonologists and thoracic surgeons are frequently asked for help. Until recently lack of technology and expertise made the management of BPF from pleural, bronchial or parenchymal sides equally disappointing.

Well, we may very well be out of dark ages. After recent humanitarian approval of Spiration Valves (IBV system®) (1) by FDA for the treatment of BPF, there is another exciting recent progress published as a retrospective case series in CHEST online in July 2014 (2) showing promise in the use of synthetic hydrogel (CoSeal; Baxter Healthcare, Deerfield, IL), for the successful closure of BPF or APF (Alveolo Pleural Fistula).

CoSeal is composed of two synthetic polyethylene glycols (PEGs). Two solutions are applied endo-bronchially via a flexible polyurethane catheter deployed through the working channel of the bronchoscope (Duplocath, Baxter Healthcare, Deerfield, IL). When the two compounds mix in the airway, they polymerize, leading to formation of a sealant plug. Within a few minutes, the sealant congeals in the airway to occlude the airway leading to the fistula. The plug that forms is gradually resorbed over the next two weeks, precluding long-term complications. The average duration between the applications of synthetic hydrogel and cessation of air leak was 2 ± 1 day in this study.

Some of the impressive features of this novel product include safety, low cost, and user friendliness.

Some questions that remain to be answered include, effectiveness of this modality in large fistula involving multiple segments or lobes of the lung, short-term reversibility in the event of failure of therapy and worsening of respiratory status before the two-week auto reabsorption period. Further prospective treatments are needed but cautious excitement is natural.

References:

1. Gillespie CT et al. Ann Thorac Surg. 2011; Jan: 91(1):270-3.

2. Hiren J. Mehta et al. Chest. 2014;Jul 24: doi: 10.1378/chest.14-0823. [Epub ahead of print]

Editorial Staff

Editor-in-Chief: Dr. Kazuhiro Yasufuku

Primary Business Address:
Kazuhiro Yasufuku, Editor-in-Chief
WABIP Newsletter
c/o Judy McConnell
101 College St., TMDT 2-405
Toronto, Ontario M5G 1L7
Phone: 416-581-7486
E-mail: newsletter@wabip.com

Associate editor: Dr. Ali Musani

Associate editor: Dr. Septimiu Murgu

WABIP News

ITEM 1: J. Patrick Barron, Professor Emeritus Tokyo Medical University, has been named a non-voting official consultant to the WABIP executive committee. Professor Barron is a specialist in medical communications and has been an active member of the WABIP since its inception more than forty years ago. He is also founder of the Ronbun medical communications website dedicated to provide free information to all medical writers in order to improve and facilitate scientific publications around the world. His philosophy and work are consistent with WABIP's goals of knowledge distribution as well as excellent in patient care, research, and education.

Figure 1: Screenshot from Ronbun webpage at www.runbun.jp

ITEM 2: The WABIP welcomes the Colombian Bronchology Association, under the leadership of Dr. Jaime Baretto from Bucaramanga, Colombia into the WABIP. In September, 2014, certified Master Instructors from Argentina and Peru will be conducting a Bronchoscopy Education Project Introduction to Flexible Bronchoscopy Program in Bogota with the assistance of Mauricio Cespedes, and in Bucaramanga with the help of Dr. Baretto.

Figure 2: Dr. Mauricio Cespedes and Dr. Jaime Baretto, Colombia Bronchology Association

ITEM 3: At the WABIP Board of Regents Meeting in Kyoto, the Board voted to hold the 2020 World Congress in Shanghai, China. The Congress President will be Dr. Quang Fa Wang of Peking University First Hospital. Our sincere congratulations to Professor Wang and his team. The congress will be hosted with assistance from the Chinese Medical Association.

Figure 3: Professor Guang Fa Wang

ITEM 4: The WABP Executive board has approved the recommendation of Dr. Semra Bilaceroglu's CME committee to proceed with applying for EACCME credits for the 2016 World Congress scheduled to be held in Florence May 8-11, 2016. This will be the first time CME credits are offered at a World Congress, and are another important step forward for our growing international organization. The Executive Board of the WABIP thanks Dr. Bilaceroglu and her team for their efforts and contributions. The President of the 19th World Congress is Dr. Stefano Gasparini. We look forward to an exciting time filled with culture and science! By the way, if you are a member of the board of regents, MARK YOUR CALENDARS- the BOR meeting will be held Sunday, May 8.

Figure 4: Flyer of Florence World Congress

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**

You can reach these webcasts by using this link: http://www.wabipacademy.com/webcast/

Links

www.bronchology.com	Home of the Journal of Bronchology
www.bronchoscopy.org	International educational website for bronchoscopy training with u-tube and facebook interfaces, numerous teachiing videos, and step by step testing and assess ment tools
www.aabronchology.org	American Association for Bronchology and I nterventional Pulmonology (AABIP)
www.eabip.org	European Association for Bronchology and Interventional Pulmonology
www.chestnet.org	Interventional Chest/Diagnostic Procedures (IC/DP) NetWork
www.thoracic.org	American Thoracic Society
www.ctsnet.org	The leading online resource of educational and scientific research information for cardiothoracic surgeons.
www.jrs.or.jp	The Japanese Respirology Society
sites.google.com/site/asendoscopiarespiratoria/	Asociación Sudamericana de Endoscopía Respiratoria

NEW 5 YEAR DATA

Established long-term effectiveness and safety

Newly published data confirm Bronchial Thermoplasty (BT), delivered by the Alair™ System, as a safe and minimally invasive procedure that provides a long-term reduction in asthma exacerbations for patients with severe asthma.

Fewer respiratory-related emergency room visits

- **84% reduction in emergency room visits** for respiratory symptoms at 1 year compared with sham-controlled patients, with reduction maintained out to 5 years[1,2]

Fewer exacerbations, with effectiveness maintained out to 5 years

- **32% decrease in severe asthma exacerbations** (requiring systemic corticosteroids) at 1 year compared with sham-controlled patients, with reduction maintained out to 5 years[1,2]

  —The decrease in severe exacerbations over 5 years included a substantial reduction in the use of systemic corticosteroids associated with those exacerbations[2]

- No increase in hospitalizations, asthma symptoms, or respiratory adverse events over 5-year period[2]

View the 5-year clinical trial results at BT5years.com

Brief Statement of Relevant Indications for Use, Contraindications, Warnings, and Adverse Events: The Alair Bronchial Thermoplasty System is indicated for the treatment of severe persistent asthma in patients 18 years and older whose asthma is not well controlled with inhaled corticosteroids and long-acting beta-agonists. The Alair System is not for use in patients with an active implantable electronic device or known sensitivity to medications used in bronchoscopy. Previously treated airways of the lung should not be retreated with the Alair System. Patients should be stable and suitable to undergo bronchoscopy. The most common adverse event of BT is an expected transient increase in the frequency and worsening of respiratory-related symptoms. Rx only.

CAUTION: Law restricts this device to sale by or on the order of a physician. Indications, contraindications, precautions, and warnings can be found with product labeling.

NOW AVAILABLE from Boston Scientific
for the treatment of severe asthma in adults

Bronchial Thermoplasty™

References: 1. Castro M, et al, for the AIR2 Trial Study Group. *Am J Respir Crit Care Med.* 2010;181:116-124. **2.** Wechsler M, et al; for the AIR2 Trial Study Group. *J Allergy Clin Immunol.* 2013; 132:1295-1302.

Please join us in April, 2015, in Barcelona !