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PULMONARY • CRITICAL CARE • SLEEP

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EOPH Newsletter

EOPH web editorial committee

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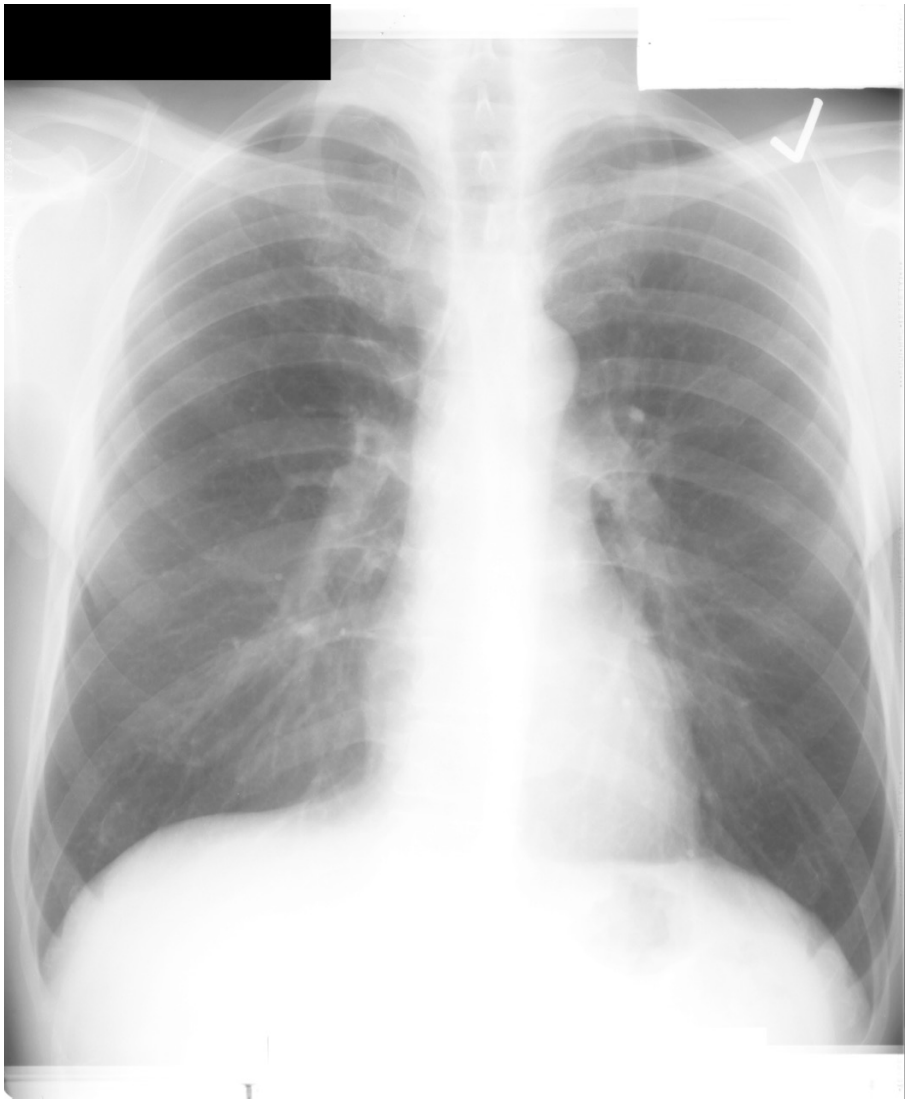
Dear EOPH members,

Happy New Year! Included are the "epub ahead of print" articles from our membership for December 2015, as well as a "Quick Hit" case presented by EOPH member Leonard Go, MD. We are certain that our members are doing great things worthy of recognition. Please send us notice of these accomplishments so that we can include them in the February 2016 newsletter. We welcome any input into what else you would like to see in the newsletter. Please contact us at kbailey@unmc.edu or craig.glazer@utsouthwestern.edu with any noteworthy publications, achievements, or suggestions for future issues.

Sincerely,
Your web committee co-chairs,
Kristina Bailey and Craig Glazer

Quick Hit: Case



50 year-old male coal miner who underwent chest radiography for surveillance of lung disease. He underwent a right upper lobectomy for what he understood to be a benign lesion three years prior. He had a 2 pack-year cigarette smoking history as a teenager. He works as a roof bolter in an underground coal mine. A chest x-ray performed 8 years prior is also shown.

Which of the following is *not* true about the disease illustrated in the chest x-ray?

A. It may be associated with obstructive pattern on pulmonary function testing
B. It may be associated with silica dust exposure
C. The lesions may be FDG-avid on PET imaging
D. The lesions may cavitate
E. Palisading histiocytes are observed on histopathological examination

Find the answer to this Quick Hit by EOPH member Leonard Go, MD, at the end of the newsletter!

Recent publications

This section highlights some of our members' best work in December 2015. We have only included "epub ahead of print" articles in an effort to simplify our search method while making you aware of your colleagues' most recent work.

Air Pollution

Developmental Neurotoxicity of Inhaled Ambient Ultrafine Particle Air Pollution: Parallels with Neuropathological and Behavioral Features of Autism and Other Neurodevelopmental Disorders. Allen JL, Oberdorster G, Morris-Schafer K, Wong C, Klocke C, Sobolewski M, Conrad K, M MP, Cory-Slechta DA. Neurotoxicology. 2015 Dec 22. pii: S0161-813X(15)30048-6. PMID: 26721665

Long-term exposure to black carbon, cognition and single nucleotide polymorphisms in microRNA processing genes in older men. Colicino E, Giuliano G, Power MC, Lepeule J, Wilker EH, Vokonas P, Brennan KJ, Fossati S, Hoxha M, Spiro A 3rd, Weisskopf MG, Schwartz J, Baccarelli AA. Environ Int. 2015 Dec 24;88:86-93. PMID: 26724585

Traffic-Related Air Pollution, Blood Pressure, and Adaptive Response of Mitochondrial Abundance. Zhong J, Cayir A, Trevisi L, Sanchez-Guerra M, Lin X, Peng C, Bind MA, Prada D, Laue H, Brennan KJ, Dereix A, Sparrow D, Vokonas P, Schwartz J, Baccarelli AA. Circulation. 2015 Dec 11. pii: CIRCULATIONAHA.115.018802. PMID: 26660284

Ischemic Heart Disease Mortality and Long-Term Exposure to Source-Related Components of U.S. Fine Particle Air Pollution. Thurston GD, Burnett RT, Turner MC, Shi Y, Krewski D, Lall R, Ito K, Jerrett M, Gapstur SM, Diver WR, Pope CA 3rd. Environ Health Perspect. 2015 Dec 2. PMID: 26629599

Ten-eleven translocation 1 (TET1) methylation is associated with childhood asthma and traffic-related air pollution. Somineni HK, Zhang X, Biagini Myers JM, Kovacic MB, Ulm A, Jurcak N, Ryan PH, Khurana Hershey GK, Ji H. J Allergy Clin Immunol. 2015 Dec 9. pii: S0091-6749(15)01577-8. PMID: 26684294

Asthma

Hitting home with technology development for asthma. Castner J, Klingman K, Sullivan S, Xu W, Titus A. Lancet Respir Med. 2015 Dec 18. pii: S2213-2600(15)00525-1. PMID: 26709078

Acceptability and feasibility of the 'DASH for Asthma' intervention in a randomized controlled trial pilot study. Blonstein AC, Lv N, Camargo CA,

Wilson SR, Buist AS, Rosas LG, Strub P, Ma J. Public Health Nutr. 2015 Dec 10:1-11. PMID: 26653101

COPD

Obesity and Functioning Among Individuals with Chronic Obstructive Pulmonary Disease (COPD). Katz P, Iribarren C, Sanchez G, Blanc PD. COPD. 2015 Dec 18:1-8. PMID: 26683222

Association of Inhaled Corticosteroids with Incident Pneumonia and Mortality in COPD Patients; Systematic Review and Meta-Analysis. Festic E, Bansal V, Gupta E, Scanlon PD. COPD. 2015 Dec 8:1-15. PMID: 26645797

Interstitial lung disease

Desmoplakin (DSP) Variants are Associated with Idiopathic Pulmonary Fibrosis. Mathai SK, Pedersen BS, Smith K, Russell P, Schwarz MI, Brown KK, Steele MP, Loyd JE, Crapo JD, Silverman EK, Nickerson D, Fingerlin TE, Yang IV, Schwartz DA. Am J Respir Crit Care Med. 2015 Dec 15. PMID: 26669357

JOURNAL CLUB: Evidence of Interstitial Lung Disease on Low-Dose Chest CT Images: Prevalence, Patterns, and Progression. Salvatore M, Henschke CI, Yip R, Jacobi A, Eber C, Padilla M, Knoll A, Yankelevitz D. AJR Am J Roentgenol. 2015 Dec 23:1-7. PMID: 26700157

Lung Cancer

Hazard Ratio of Smoking on Lung Cancer in Korea According to Histological Type and Gender. Yun YD, Back JH, Ghang H, Jee SH, Kim Y, Lee SM, Samet JM, Lee KS. Lung. 2015 Dec 31. PMID: 26718701

Climate Change

Views of AAAAI members on climate change and health. Sarfaty M, Kreslake JM, Casale TB, Maibach EW. J Allergy Clin Immunol Pract. 2015 Dec 15. pii: S2213-2198(15)00529-2. PMID: 26703816

Changing Discourses in Climate Health: An Anti-disciplinary Perspective. Allen M, Akpinar-Elci M. Ecohealth. 2015 Dec 2. PMID: 26631382

Ozone

Long-Term Ozone Exposure Increases the Risk of Developing the Acute Respiratory Distress Syndrome. Ware LB, Zhao Z, Koyama T, May AK, Matthay MA, Lurmann FW, Balmes JR, Calfee CS. Am J Respir Crit Care Med. 2015 Dec 17. PMID: 26681363

Tobacco smoking and e-cigarettes

Temporal and Spatial Expression of TGF-β Following Airway Remodeling to Tobacco Smoke in Rats. Hoang LL, Nguyen YP, Aspeé R, Bolton SJ, Shen YH, Wang L, Kenyon NJ, Smiley-Jewell S, Pinkerton KE. Am J Respir Cell Mol Biol. 2015 Dec 4. PMID: 26637070

Flavoring Chemicals in E-Cigarettes: Diacetyl, 2,3-Pentanedione, and Acetoin in a Sample of 51 Products, Including Fruit-, Candy-, and Cocktail-Flavored E-Cigarettes. Allen JG, Flanigan SS, LeBlanc M, Vallarino J, MacNaughton P, Stewart JH, Christiani DC. Environ Health Perspect. 2015 Dec 8. PMID: 26642857

Population studies

The global burden of injury: incidence, mortality, disability-adjusted life years and time trends from the Global Burden of Disease study 2013. Haagsma JA, Graetz N, Bolliger I, Naghavi M, Higashi H, Mullany EC, Abera SF, Abraham JP, Adofo K, Alsharif U, Ameh EA, Ammar W, Antonio CA, Barrero LH, Bekele T, Bose D, Brazinova A, Catalá-López F, Dandona L, Dandona R, Dargan PI, De Leo D, Degenhardt L, Derrett S, Dharmaratne SD, Driscoll TR, Duan L, Petrovich Ermakov S, Farzadfar F, Feigin VL, Franklin RC, Gabbe B, Gosselin RA, Hafezi-Nejad N, Hamadeh RR, Hijar M, Hu G, Jayaraman SP, Jiang G, Khader YS, Khan EA, Krishnaswami S, Kulkarni C, Lecky FE, Leung R, Lunevicius R, Lyons RA, Majdan M, Mason-Jones AJ, Matzopoulos R, Meaney PA, Mekonnen W, Miller TR, Mock CN, Norman RE, Orozco R, Polinder S, Pourmalek F, Rahimi-Movaghar V, Refaat A, Rojas-Rueda D, Roy N, Schwebel DC, Shaheen A, Shahraz S, Skirbekk V, Søreide K, Soshnikov S, Stein DJ, Sykes BL, Tabb KM, Temesgen AM, Tenkorang EY, Theadom AM, Tran BX, Vasankari TJ, Vavilala MS, Vlassov VV, Woldeyohannes SM, Yip P, Yonemoto N, Younis MZ, Yu C, Murray CJ, Vos T. Inj Prev. 2015 Dec 3. pii: injuryprev-2015-041616. PMID: 26635210

Environmental and Occupational Health

Short-term metal particulate exposures decrease cardiac acceleration and deceleration capacities in welders: a repeated-measures panel study. Umukoro PE, Cavallari JM, Fang SC, Lu C, Lin X, Mittleman MA, Christiani DC. Occup Environ Med. 2015 Dec 7. pii: oemed-2015-103052. PMID: 26644456

Lung Function before and after a Large Chlorine Gas Release in Graniteville, South Carolina, USA. Clark KA, Karmaus WJ, Mohr LC, Cai B, Balte P, Gibson JJ, Ownby D, Lawson AB, Vena JE, Svendsen ER. Ann Am Thorac Soc. 2015 Dec 22. PMID: 26695511

Agriculture

Decreased lung function in 7-year-old children with early-life organophosphate exposure. Raanan R, Balmes JR, Harley KG, Gunier RB, Magzamen S, Bradman A, Eskenazi B. Thorax. 2015 Dec 3. pii: thoraxjnl-2014-206622. doi: 10.1136/thoraxjnl-2014-206622. PMID: 26634937

Mechanisms

In vitro cleavage of diisocyanate-glutathione conjugates by human gamma-glutamyl transpeptidase-1. Wisnewski AV, Liu J, Nassar AF. Xenobiotica. 2015 Dec 18:1-7. PMID: 26678254

Low-grade inflammatory polarization of monocytes impairs wound healing. Yuan R, Geng S, Chen K, Diao N, Chu HW, Li L. J Pathol. 2015 Dec 22. doi: 10.1002/path.4680. PMID: 26690561

Screens, Diagnostics, and Drug Development

Immunochemical detection of the occupational allergen, methylene diphenyl diisocyanate (MDI), in situ. Wisnewski AV, Liu J.J Immunol Methods. 2015 Dec 12. pii: S0022-1759(15)30074-0. PMID: 26690039

Screening for chemical toxicity using cryopreserved precision cut lung slices. Watson C, Damiani F, Ram-Mohan S, Rodrigues S, de Moura Queiroz P, Donaghey TC, Lichtenstein J, Brain JD, Krishnan R, Molina RM. Toxicol Sci. 2015 Dec 29. pii: kfv320. PMID: 26719368

Rapid Identification of Novel Inhibitors of the Human Aquaporin-1 Water Channel. Patil RV, Xu S, van Hoek AN, Rusinko A, Feng Z, May J, Hellberg M, Sharif NA, Wax MB, Irigoyen M, Carr G, Brittain T, Brown P, Colbert D, Kumari S, Varadaraj K, Mitra AK. Chem Biol Drug Des. 2015 Dec 18. PMID: 26685080

Healthcare Guidelines and Education

Recommended Reading from Rutgers Robert Wood Johnson Medical School Fellows. Radbel JM, Jobanputra AM, Singh J, Jagpal S, Hussain S. Am J Respir Crit Care Med. 2015 Dec 14. PMID: 26652659

Expectation of sickness absence duration: a review on statements and methods used in guidelines in Europe and North America. de Boer WE, Mousavi SM, Delclos GL, Benavides FG, Lorente M, Kunz R. Eur J Public Health. 2015 Dec 24. pii: ckv222. PMID: 26705569

Things worth celebrating

We know that many of you have successes to share with us. Please help us expand this section by emailing us your good news: kbailey@unmc.edu or craig.glazer@utsouthwestern.edu.

In the News

EOPH member Paul Blanc, MD, MSPH published a blogpost on Psychology Today in December, detailing the dangers of inhalational mercury exposure by at-home precious metal retrieval from electronics. Read the full post on Psychology Today.

Quick Hit: Answer

E. Palisading histiocytes are observed on histopathological examination.

Discussion:

The chest x-ray finding is an example of progressive massive fibrosis (PMF) in a coal miner. PMF may be seen in coal workers' pneumoconiosis or with silicosis. The lesions are frequently found in the upper and mid-lung zones, and may result from the coalescence of smaller pneumoconiotic lesions. There may be associated with architectural distortion from volume loss and emphysema. The lesions may cavitate.

Coal workers' pneumoconiosis had previously declined in prevalence in the United States after the institution of dust controls in coal mines with the passage of the 1969 Federal Coal Mine Health and Safety Act. However, since the late 1990s, an increase in the prevalence of CWP in general and PMF in particular have been observed [1]. Rapidly progressive pneumoconiosis (RPP) has been observed in "hot spots" in Appalachia [2], and is believed to be related to poor dust controls and increased silica dust exposure. Roof bolters (miners who drill into the rock in the mine ceiling to place bolts to prevent roof collapse) and miners who work at the coal face are believed to be at particular risk of RPP [3].

Coal miners may develop restrictive, obstructive, or mixed ventilatory defects as a result of coal mine dust exposure, and PMF is not associated with a specific pattern on pulmonary function testing. When unilateral, PMF lesions may be initially concerning for primary lung carcinomas. The use of PET imaging may not be helpful because PMF lesions are metabolically active and

may demonstrate FDG uptake [4]. Due to diagnostic uncertainty, biopsy or resection of lesions may sometimes be pursued, with the finding of coal dust, collagen, and macrophages with areas of necrosis [5]. Endarteritis and invasion of pulmonary vessels with fibrous tissue are typically also observed.

References

[1] Blackley DJ, Halldin CN, Laney AS. Resurgence of a debilitating and entirely preventable respiratory disease among working coal miners. Am J Respir Crit Care Med 2014;190:708–709.

[2] Antao VC dos S, Petsonk EL, Sokolow LZ, et al. Rapidly progressive coal workers' pneumoconiosis in the United States: geographic clustering and other factors. Occup Environ Med 2005;62:670–674.

[3] Attfield MD, Petsonk EL. Advanced pneumoconiosis among working underground coal miners-Eastern Kentucky and Southwestern Virginia, 2006. MMWR Morb Mortal Wkly Rep 2007;56:652–655.

[4] Chung SY, Lee JH, Kim TH, et al. 18F-FDG PET imaging of progressive massive fibrosis. Ann Nucl Med 2010;24:21–27.

[5] Thurlbeck WM, Churg A editors. Thurlbeck's pathology of the lung, 3rd ed. New York: Thieme; 2005.

Send us your interesting cases

The web committee is currently soliciting interesting pulmonary cases with an EOPH focus for additional Quick Hits. These cases will be posted on the website and highlighted in this newsletter. They will be peer reviewed prior to acceptance, so this is a good opportunity for your trainees. kbailey@unmc.edu or craig.glazer@utsouthwestern.edu.