

PEER-REVIEWED

CALCIFYING NESTED STROMAL-EPITHELIAL TUMOR OF THE LIVER: A CASE REPORT AND REVIEW OF LITERATURE

by Kenneth Steven Taylor
Fellow Conference Scholarship Winner



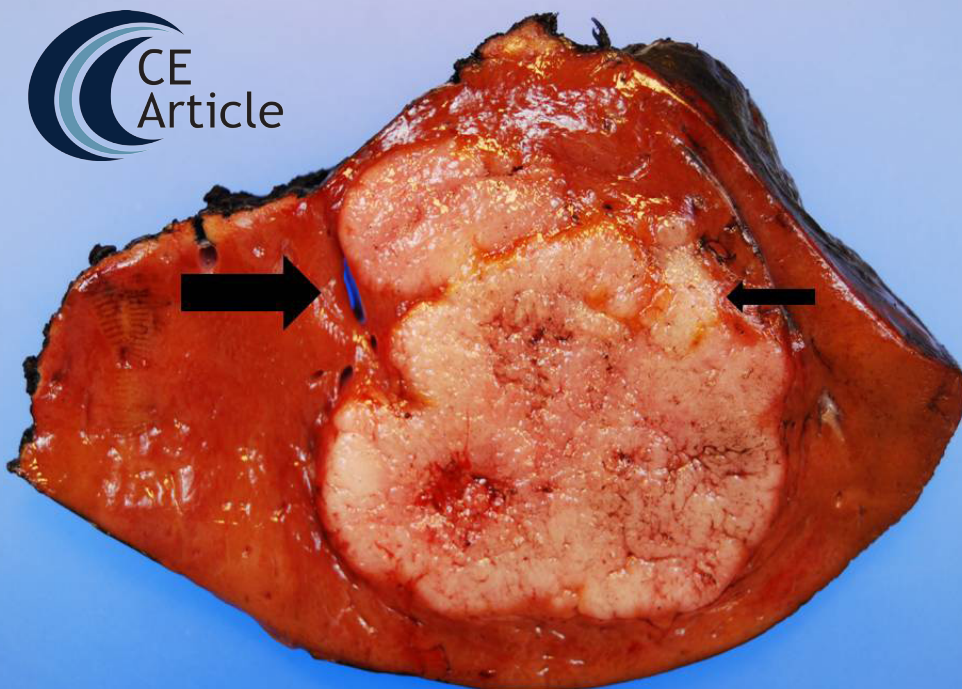
Fellow members were given the opportunity to apply for a scholarship to attend the 2014 New York conference. Ten case reports were received and the top two each received a scholarship valued at \$1800 (full week registration + \$1000 to help cover travel expenses). The following submission was chosen as one of the winning entries. Congratulations Steve!

A 28-month-old girl presented with a persistent cough and a 4-5 day history of low grade fever of 100° F. Imaging revealed a right hepatic lobe lesion with calcifications and prompted referral to our institution for further evaluation. She had no history of jaundice, bloody emesis, or hematochezia. Lab tests results were as follows: AST-32, ALT-24, alkaline phosphatase-143, LDH-358, total bilirubin-0.3, total protein-7.4, beta-HCG-less than 1, and AFP less than 5. A computerized tomography scan (Fig. 1) of the chest and abdomen revealed the 5.5 x 5.4 x 4.0 cm mass, and no evidence of vascular invasion or thrombosis. The radiologic differential



[Figure 1] Magnetic resonance imaging (MRI) axial T2 weighted image demonstrating a lobulated mass in the right lobe of the liver with scattered, focal calcifications.

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Gross Photo Unknown
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JOURNAL SUBMISSIONS

The AAPA encourages any AAPA member or interested party to contribute articles, updates, photos or upcoming event announcements for the quarterly edition of *The Cutting Edge*. In particular, articles related to the field of pathology are welcomed. Articles and photos may be submitted electronically. (**Note: photo files must be a minimum of 300 dpi resolution.**)

Use the upload link on the AAPA website or send your contributions directly to journal@pathassist.org. All submitted material is edited for content and clarity. Research articles and case reports are subjected to a peer review process. Please see the AAPA website for complete submission details.

JOURNAL DEADLINES

Q1: January 1 **Q3:** July 1
Q2: April 1 **Q4:** October 1



AAPA - THE PREMIER PA ORGANIZATION

The Cutting Edge is a quarterly journal published by the American Association of Pathologists' Assistants

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Letter from the Editor



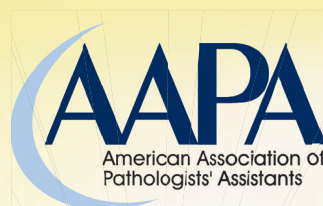
Dennis Strenk
Editor-in-Chief
journal@pathassist.org

Two of our members were recently recognized on the ASCP's 40 Under Forty list. This is the first time that PAs were given this honor. Jon Bakst and Alejandra Meza were kind enough to answer a few questions for us about this recognition. See the short interview with them on page 15.

The fall conference in Toronto is fast approaching, and hopefully you receive this journal issue before then. Conference Committee Chair, Heather Manternach, has provided a preview of some things to see and do while in Toronto. See page 14 for that, and don't forget to attend the poster sessions in Toronto for some additional CE credits.

Speaking of CE, we have our usual two credits available from this issue. In the "Meet the Committee" feature you can learn all about the PR Committee. We also have our usual columns, the member spotlight, and a recap of the second annual PA Day.

Lastly, I need to say goodbye to Heidi Wagner, who is leaving the Publications Committee to pursue other projects. Heidi has served as the Vice Chair since 2009, and was always very helpful and full of good ideas. Good luck to her. ■



Our Mission

The AAPA is dedicated to providing comprehensive professional support for pathologists' assistants.

Our Vision

The AAPA will be the premier professional association for pathologists' assistants, supporting the individual practitioners as they serve patients, pathologists, and the profession.

Core Values

Quality Patient Care ■ **Education** ■ **Advocacy** ■ **Collaboration**

Quality Patient Care: The AAPA ensures quality patient care is an integral component to the environment and endeavors of the Association.

Education: The AAPA provides educational opportunities that support quality patient care and promote the advancement of professional competencies.

Advocacy: The AAPA advocates for pathologists' assistants.

Collaboration: The AAPA commits to active collaboration with outside organizations whose purposes are synergistic with the Association.

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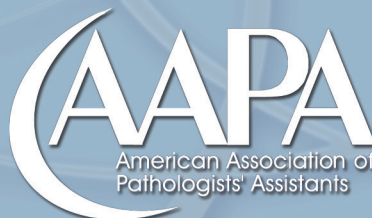
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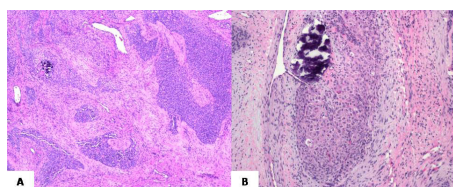
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Calcifying Nested Stromal-Epithelial Tumor of the Liver: A Case Report and Review of Literature (con't. from cover)

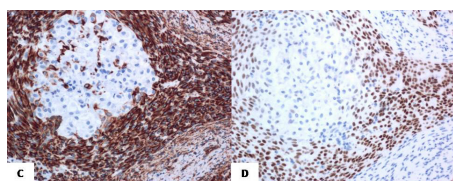
diagnosis was hepatoblastoma, and less likely hepatocellular carcinoma. An open right hepatic lobe biopsy was performed, and a 1.5 cm fragment of yellow white, firm tissue focally rimmed by brown hepatic parenchyma was submitted for pathologic examination. An intraoperative frozen section consultation yielded a diagnosis of, "spindle cell neoplasm; defer to permanent sections for further classification."

Microscopic examination of the permanent sections revealed a tumor composed of nests of epithelial and spindle cells within a myofibroblastic stroma with occasional foci of bone and calcification (Fig. 2A-B).



[Figure 2A-B] A: Section of tumor displaying nests of spindle and epithelioid cells with intervening desmoplastic stroma with focal calcification (H&E x 4); B: Higher magnification of same image demonstrating both epithelioid and spindle cells within a nest with associated calcification (H&E x 10).

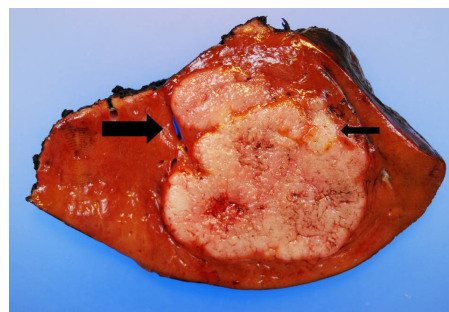
There were focal proliferating bile ductules at the periphery of the nests, and the grossly recognized hepatic parenchyma at the edge of the specimen revealed hepatocytes with mild steatosis. Mitotic activity within the lesional cells was low. A battery of immunohistochemical stains was applied, and the epithelioid and spindle cells were weakly positive for desmin, cytokeratin (CK) AE1/AE3, CD56, and S100. The nest cells were strongly positive for CD117, β -catenin, vimentin (Fig. 2C), Wilms tumor 1 (WT-1: nuclear label—Fig. 2D), glypican three (nuclear label), and CAM5.2. Blood vessels within the intervening stroma were markedly positive for CD34, and the desmoplastic myofibroblasts were diffusely positive for smooth muscle actin. Tumor cells failed to demonstrate immunoreactivity for alpha fetoprotein, HMB-45, inhibin, synaptophysin, CD99, CK7, CK20, and EMA.



[Figure 2C-D] C: Vimentin with diffuse immunoreactive staining of spindle and desmoplastic stromal cells with focal staining of epithelioid nest cells (x20); D: WT-1 with positive nuclear staining of spindle cells and focal, weak nuclear staining of epithelioid cells (x20).

Molecular analysis to rule out Ewing's sarcoma, desmoplastic small round cell tumor, and synovial sarcoma was negative for fusion transcripts. Based on the histoarchitectural features, immunoprofile, and negative molecular studies, a diagnosis of calcifying nested stromal-epithelial tumor of the liver was rendered.

One month following the diagnosis the patient underwent further surgical intervention and pathology received a 273.0g, 14.0x9.0x6.8cm right hepatectomy specimen. The tumor involved Couinaud's segments 7 and 8 and measured 5.5 x 5.0 x 4.5 cm. The unencapsulated tumor had grey-white to yellow, focally calcified cut surfaces with a solitary, cavitory defect with minimal associated hemorrhage; necrosis was not present. The procedure was complicated as the location of the tumor was in close proximity to the inferior vena cava and was contiguous with the right hepatic vein (Fig. 3). Intraoperative consultations were requested on both the surgical and right hepatic vein margins; both of which were microscopically negative. The histological and immunohistochemical features proved similar to those in the initial biopsy, confirming the diagnosis.



[Figure 3] Coronal section of right hepatectomy specimen demonstrating the unencapsulated, lobulated features of this tumor. Note the close proximity to the right hepatic vein (large arrow) and the area of intralesional bone formation (small arrow).

DISCUSSION

Calcifying nested stromal-epithelial tumor (CNSET) is a recently described and exceedingly rare hepatic lesion of enigmatic histogenesis. First reported by Ishak et al¹ in a series involving three patients, the authors proposed the term "ossifying stromal-epithelial tumor" of the liver. Subsequent case reports and series described this new entity as "ossifying malignant mixed epithelial and stromal tumor," "desmoplastic nested spindle cell tumor of liver," "nested stromal-epithelial tumor of the liver," and "calcifying nested stromal-epithelial tumor of the liver."¹⁻¹⁴ CNSETs mainly affect the

pediatric and young adult population with an age range of 2-34 years with a predilection towards females (76%).⁸ Typically, the lesion is found in the right lobe of the liver,⁸ incidentally during routine follow-up for previously documented lesions such as hemangioendotheliomas.^{7-8,13} In our case, the lesion was noted on a routine roentgenogram during routine work-up of respiratory infection, and subsequently referred to our institution for further evaluation. A few reported cases presented with Cushing/Cushingoid syndrome resultant from adrenocorticotrophic hormone (ACTH) produced by the tumor. Upon surgical excision the Cushingoid symptoms regressed.^{4-5,7,15}

On roentgenograms, CNSETs demonstrate a well-circumscribed, solid mass with nodular borders and focal calcifications.⁸ Brodsky et al¹⁶ recommend either CT or PET/CT imaging analysis to document extrahepatic metastasis or local recurrence.

Resected specimens are well-circumscribed, lobulated, and lack a capsule. The tumors range in size from 2.8-30.0 cm in greatest dimension.⁸ The cut surface is grey-yellow to white, with scattered calcification, foci of hemorrhage, necrosis, and cyst formation.⁷⁻⁸ The histoarchitecture is a characteristic nested arrangement of bland-appearing cells which may be small, basophilic, and short to oval, or elongated and uniformly spindle-shaped, or occasionally, large eosinophilic epithelial cells. Foci of calcification, osteoid formation, or dense osteoid-like collagen may be present.⁷ The spindle cells are predominantly located at the periphery of the nests while the epithelioid component is present centrally.⁸ Reactive bile ductular proliferations may be present at the periphery of the lesion.⁷ Focal areas of myxoid and cystic degeneration and necrosis have been observed⁸ as well as a few cases with vascular invasion.^{2,7} Mitotic activity is generally less than 1 per 10 high power fields (HPFs); however, a few cases have reported up to 5-7 mitoses per 10 HPFs.^{4,7} Large tumor volume, infiltrative growth patterns, vascular invasion, necrosis, and increased mitotic activity are associated with recurrence.⁷ The histomorphology of our case displayed the classical features as described above without areas of necrosis, high mitotic activity, or vascular permeation.

The spindle and epithelioid cells are positive for cytokeratin (CK) AE1/AE3 and CAM 5.2, with variable staining observed with epithelial membrane antigen (EMA), CK8,

CK18, and CK19.^{3,7-8} The mesenchymal nature of the nest cells is demonstrated with diffuse immunoreactivity to vimentin^{3,7-8} and variable staining with CD117.⁸ Neuron-specific enolase typically reacts with the nest cells, depicting neural differentiation.⁷⁻⁸ These staining properties support the hepatic stem cell theory of the tumor origin, in that the nest cells express markers demonstrating epithelial, mesenchymal, and neural differentiation. Nuclear label for Wilms tumor-1 (WT-1) is present in the nest cells,^{3-4,7,12-13,17} which may also show immunoreactivity with CD56, CD57, CD99 and progesterone.⁸ The nest cells do not express synaptophysin, desmin, HepPar-1, HMB45, inhibin, estrogen, thyroid transcription factor-1 (TTF-1), alpha fetal protein (AFP), CK7, and Ber-EP4.^{3,7-8,13} S100 protein is weakly positive in nest cells,^{3,7-8} but in a number of cases it is positive within the desmoplastic stroma.⁷ The myofibroblastic and fibroblastic stromal cells are consistently immunoreactive for smooth muscle actin (SMA)^{3-4,7,13} and vimentin^{3,7-8} while CD34 highlights the endothelium of blood vessels, and may demonstrate cytoplasmic staining of stromal cells.³⁻⁴ In contrast to reported results, our case demonstrated focal, mild desmin staining in the lesional cells, raising suspicion for desmoplastic small round cell tumor (DSRCT); however, molecular analysis ruled out DSRCT.

Ultrastructural analysis of CNSETs provides limited diagnostic utility. Neurosecretory granules were not present in the reported cases^{3,5,8} which would serve to rule out carcinoid tumor. Typical examination shows a composition of bland spindle and polygonal cells, with increased amounts of rough endoplasmic reticulum and mitochondria, with focal basal lamina⁸ as well as focal well-developed cell-to-cell junctions.^{3,5} Also of note, the epithelioid cells contained collections of intermediate filaments, and possessed interdigitating cell membranes.³

Of the tumors subjected to molecular/genetic analysis, all but one of the cases were negative for EWS-WT1, EWS/PNET, or SYT-SSX translocations.^{3,5,7,11} One case report by Propocio et al¹² demonstrated several nuclei positive for EWS-WT1 fusion transcripts but were negative for the SYT-SSX translocation. The positive result was disregarded as the typical histoarchitectural features of CNSETs were present in their case, and their tumor failed to express desmin.¹² Molecular analysis of our tumor lacked fusion transcripts for all three translocations.

The differential diagnosis of CNSETs includes those tumors with spindle and

epithelial components. Desmoplastic small round cell tumor (DSRCT) are positive for desmin and have the t(11;22) (p13;q12) translocation whereas CNSETs are negative for desmin and lack the EWS-WT1 fusion transcript.^{3,5,7,11-12} Synovial sarcomas harbor a diffuse architecture of densely cellular spindle cell fascicles or hemangiopericytomatous vascular patterns which are absent in CNSETs.⁸ Adding further differentiation, CNSETs lack CK7 expression and the SYT-SSX fusion transcripts.³ Gastrointestinal stromal tumors (GISTs) may be problematic to distinguish from CNSETs as both tumors express CK8, CK18 and CD117.⁷ The perinuclear vacuolization with distinct nuclear palisading in GISTs is helpful, in addition to the strong expression of CD34.⁷ Sarcomatoid carcinoma is a disease of the elderly and has nuclear atypia and a demonstrable carcinoma component absent in CNSETs.⁷⁻⁸ Hepatoblastoma with bone or osteoid formation may pose a diagnostic dilemma, but the presence of fetal or embryonic hepatocytic differentiation, cord-like structure, absence of stromal architecture, and elevated serum alpha fetal protein should aid in the distinction from CNSETs.^{4,7-8} The spindled mesenchymal and epithelial components of a Wilms tumor metastasis to the liver could appear similar to CNSET, but the latter possess a lower nuclear to cytoplasmic ratio resembling maturing tissue elements, and the bile ducts encountered in CNSETs do not resemble the epithelial component of Wilms tumor.⁴ The nests of CNSETs with excessive osteoid may suggest the diagnosis of ossifying renal tumor in infancy; however, this entity has neither been reported to metastasize, nor contain the stromal elements observed in CNSETs.⁴ Distinguishing between CNSETs and carcinoid tumors may prove problematic, as the spindled nest cells closely resemble spindled carcinoid tumor.⁴ The organoid pattern of a CNSET associated with a desmoplastic stroma is a helpful distinguishing feature, as is the absence of immunoreactivity for synaptophysin or chromogranin which are expressed in carcinoids.^{4,8}

The origin of CNSETs remains unknown. One proposal is that the tumor arises from hepatic progenitor cells which have the ability to differentiate into hepatocytes and bile duct cells.^{5,16} Immunohistochemical staining of these tumor cells (see discussion above) provides support for this proposal. Several patients provided a history of clinically documented calcified hepatic nodules interpreted at the time to represent teratoma, granuloma, or calcified hemangiomas.^{2-3,7} This led Maklout et al⁷ to propose CNSETs may begin as a small calcified lesion and subsequently progress

into a large space occupying lesion with an indolent course. A few of the reported patients had a history of oral contraceptive use (OCPs)^{2,9,12} which have been associated with the genesis of hepatic adenomas.¹⁸ This correlation lacks convincing evidence, as CNSETs fail to stain with hepatic antigens, estrogen, or progesterone markers.^{3-4,7,12-13} Assman et al¹⁷ suggest that protein stabilizing mutations in the exon 3 region of the beta-catenin gene result in the final translocation of the beta-catenin protein in the nucleus. According to their findings, CNSETs may be regarded as a variant of classic hepatoblastoma with a defective mesenchymal-epithelial transition, where the increased levels of beta-catenin lead to a cascade of events that trigger a mesenchymal status and block normal epithelial transition.¹⁸ With the limited number of cases, further investigation is warranted to elucidate the histogenesis of this tumor.

Due to the limited number of reports, the clinical behavior of CNSETs is poorly defined and data for stratification of risk in CNSETs, such as grading, lymphovascular permeation, etc., are still undefined.¹⁰ In the majority of cases, the patients acquired long-term survival after complete surgical resection with clear margins.⁸ To date, five cases of locally recurring CNSETs, one case with histologic confirmation of lymph node metastasis,⁵ and one case with pulmonary metastasis,¹⁰ have been reported.¹³ This data would suggest CNSETs may be considered a tumor of low malignant potential requiring close clinical surveillance. Two patients have undergone liver transplant for unresectable disease and one died after postoperative complications without recurrence of disease.⁷ The second patient expired after the development of pulmonary metastases.¹⁰ Homman et al¹⁰ suggest that liver transplantation should not be recommended in the treatment of CNSETs. Radiofrequency ablation treatment has been used to reduce tumor burden; however, one patient developed a second recurrence in less than two years.⁷ Complete surgical resection appears to be the best treatment option as chemotherapy and radiotherapy have failed to be efficacious in those with unresectable tumors.^{8,13}

In summary, this case report delineates the clinical history, radiological findings, histomorphological features, ancillary testing modalities and therapeutic options for an extremely rare primary hepatic neoplasm whose pathogenesis and histogenesis is currently ill-defined. Education on calcifying nested stromal-epithelial tumor occurrence may assist in

Continued on page 9 >>

Meet the Committee

Public Relations Committee

The Public Relations Committee has two constant goals:

1. To establish and maintain excellent communication and public relations with AAPA membership and with the professional community in which we practice.
2. To serve as a steward of the profession, to represent Pathologists' Assistants and to continually support and promote the AAPA.

Over the last couple of years, we have strived to create new avenues for highlighting the amazing work of Pathologists' Assistants and their dedication to providing quality patient care. The establishment of April 14th, Pathologists' Assistant Day, serves as a day to bring the people of an otherwise "behind the scenes" profession to the forefront. The photo contest showcases your talents, and our social media accounts, specifically Instagram, are connections to spread these talents to the rest of the public.

We also exhibit the AAPA booth at several relevant conferences during the year to promote the profession. A special thanks to Sarah Rose, Maisha Ferguson, and Amy Koogle for volunteering at the booth this past year!

Please stay tuned – the PR and IT committees have more in store for you!!! Now, meet your PR Committee:



Charlene has been the PR Committee Chair since 2013 and is a 2011 graduate of Rosalind Franklin University of Medicine and Science. She is a PA at the University of Chicago Medicine.

Charlene Gettings, MS, PA(ASCP)

Why did you want to be a PA?

I had no idea this profession existed. I dreamt of becoming a forensic pathologist or physical anthropologist, but decided against both careers. I knew I liked a laboratory setting, I loved anatomy and I have an innate curiosity for wanting to know what happens in the body. After talking with the director of the clinical laboratory program in Chicago, my eyes were opened to the PA profession. It was love at first sight. Now, here I am, still in love with the profession and wanting to share it with anyone with the stomach to listen to what I do all day long!

Why did you get involved with the AAPA?

I first got involved as a student, during my clinical rotation, when I provided a list of websites I used for studying or reference, for the Knowledge Center. I also wanted to keep learning more about the profession and the association from a different viewpoint. I had no idea that the association was run almost completely by volunteers that are practicing PAs. I doubt that many other professional associations can boast that fact and it makes me very proud. Volunteering with the AAPA has also helped me to grow professionally by networking with pathologists, residents and other exhibitors through travels with the booth. It has also helped me to challenge myself. I'm learning about marketing, website design, advocacy, and just getting out of my comfort zone! It is very fulfilling having a first-hand opportunity to shape and promote my profession.



Joel has been the PR Vice Chair since 2014 (NYC conference) and is a 2013 graduate of Rosalind Franklin University of Medicine and Science. He is a PA at the University of Chicago Medicine.

Joel Wichmann, MS, PA(ASCP), MLS(ASCP)

Why did you want to be a PA?

I feel our profession plays an important role in patient care and will continue to be in the future, perhaps unsung, but important none the less. I enjoy having a skill set that contributes to the healthcare community in a unique way and I love to teach. I have always been drawn to pathology because it innately searches for and provides answers to why someone is sick at the most basic level, offering a depth of understanding unlike any other specialty.

Why did you get involved with the AAPA?

It offers me an opportunity to think of creative ways to promote our profession and engage the members. As an AAPA committee member, I get to have a global impact on a profession I love first-hand and immediately see those results. Additionally, I am being exposed to practices (i.e., marketing) that I wouldn't have necessarily in my career. Finally, I feel I am lucky to get to network and learn from PAs with different backgrounds and more experience than me.



Hollis has served as the Social Media Coordinator since 2014 and is a 2012 graduate of Rosalind Franklin University of Medicine and Science. She is a PA at UT Southwestern.

Hollis Notgross, MS, PA(ASCP)

Why did you want to be a PA?

I wanted to become a PA after starting as a lab assistant in histology, thanks in part to a fellow PA who was a great teacher and leader in our lab and encouraged me to get my Masters at an accredited PA school. I'd enjoyed anatomy and physiology, but never knew there was such a job as a PA prior to seeking out laboratory jobs that fit with my undergraduate degree. I currently work as a PA in a teaching hospital where I get to see a variety of cancer cases on a daily basis.

Why did you get involved with the AAPA?

My desire to educate others--both in the medical community and outside of it--about who we are and what we do as PAs led to my decision to get involved as a volunteer with the AAPA within Public Relations, and now I get to do what I love every day, and educate the public about our unique career through a variety of social media forums. The people I have met through our Instagram site, and the questions and gratitude we get on a regular basis make me proud to be a member of the PR committee through the AAPA. ■



Get involved with the AAPA! During breakfast and breaks at the 2015 Annual Conference, tables will be available where you can talk with volunteers about their experience and ask them questions about their committee. Find out how fun and rewarding it is to be an AAPA volunteer!

PATHOLOGY Tips & Tricks



Bill Ahlfeld

tipsandtricks@pathassist.org

Frozen Section Aide

Our first tip for this quarter comes from Michael Mazzotta, AAPA Board of Trustees member. Michael has created a simple trick to help stabilize the frozen section chuck while applying the OCT. Michael observed the pathologist holding the chuck (with OCT) in one hand and putting tissue on it with the other. In the process, he was tilting it, dripping OCT, moving tissue, and generally making a mess.

While at lunch, Michael observed a coworker drinking a bottle of water and had a thought. When the coworker was done, Michael asked for the empty water bottle. Cutting the top four inches off the bottle (as shown in Fig. 1), Michael was able to use the bottle as a stable rest when preparing the chuck (see Fig. 2). Resting the bottle top on the workbench keeps the chuck level and leaves both hands free for applying the tissue. It holds all sizes of chucks and when it becomes soiled a new one is only a trashcan away.



Fig. 1



Fig. 2

Say Yes

Whenever possible, say YES. What do I mean? Stay tuned. I didn't receive a second tip this quarter for the column (HINT). So instead, I will share some of my personal experience with some important advice for our younger members, but relevant to all. Having now mentored PA students and others in the lab for (too) many years now, one can imagine that I have witnessed many levels of interest, motivation and drive.

What has served me well and what I suggest is, SAY YES. At any level of your career you will be asked to do more and more things. Many of these may be beyond those duties you expected. Instead of making excuses—too much work, not enough time, not my job—accept and complete the task and do it well. While this will likely get you additional tasks, it will also demonstrate to all those involved that you are the person who can get things done. The more distant from your normal duties that the request is, the more beneficial completing it will be, both professionally and personally. Volunteer for these tasks. What you may not immediately realize is that the knowledge or experience gained out of your 'comfort zone' may be just those tasks that are required of you in a new position or promotion you are seeking. This will also make you stand out to superiors when special projects or opportunities arise.

Do you have a special tip or technique that has helped you with your workday? Care to share it with your fellow PAs? Members can email their suggestions to tipsandtricks@pathassist.org. If photos will help the clarity or brevity of your tip, please include them with your message. (Remember: *a picture is worth a thousand words*). ■



A Pathologists' Assistant's Perspective of Radioactive Seed Localization

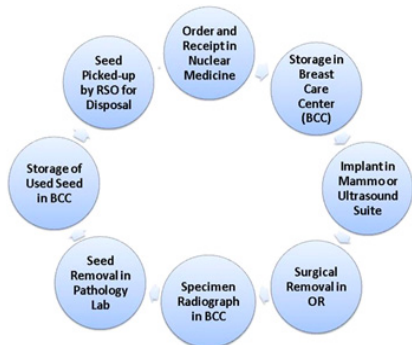
by Kathy Bykowicz



Background

Radioactive seed localization has become an alternative to traditional wire localization of non-palpable breast lesions. The use of the seed localization is considered more patient friendly, by eliminating the need for the patient to have a localization wire inserted on the same day of surgery. Also, surveyed patients had expressed discomfort associated with the protruding wires. It was suspected that the more precise seed localization could result in smaller resections with a concomitant decrease in the number of blocks processed in pathology. The utilization of seed localization requires trained staff members at the level of radiology, surgery, and pathology in order to achieve optimal patient results. Within our institution, certified Pathologists' Assistants (PAs) are responsible for the primary seed retrieval from the specimen and the subsequent transfer of the chain of custody to radiology.

Tracking of the Radioactive Seed (Fig. 1)



[Fig. 1] Radiation Safety and Regulatory Aspects of Radioactive Seed Localization (RSL) of Nonpalpable Breast Lesions; Michael Sheetz, University of Pittsburgh, Radiation Safety Office, 2013

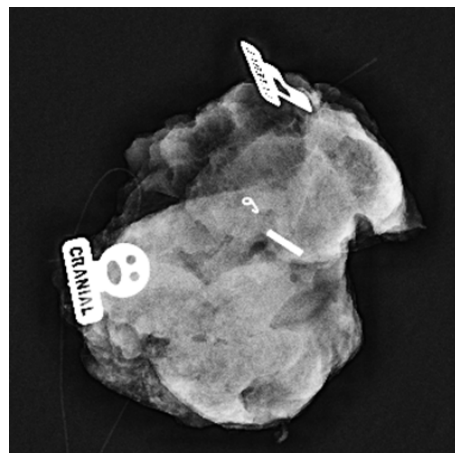
- The Iodine-125 radioactive seed is received in an FDA approved preloaded sterile 18-gauge needle use to inject the seed within the site of interest. These needles are receive by the Nuclear Medicine department and sent to the Breast Care Center.

- Prior to surgery, the seed is injected into the patient under radiographic or ultrasonic guidance, often using an already-present biopsy clip at the site of previous biopsy as a landmark.
- The site of interest that the seed designates is surgically removed in the OR.
- The seed-containing specimen is radiographed to verify the seed's presence.
- The seed is taken to pathology for removal from the specimen.
- The seed is stored in the Breast Care Center until retrieval by the Radiation Safety Office for disposal.

Methodology

Safe removal of the seed concurrent with specimen dissection and margin assessment must follow a standardized sequence subject to oversight by radiation safety. Using a 'train the trainer' methodology, PAs establish proficiency and train subsequent staff including pathologists, residents, and fellows on the appropriate methodology.

- The seed is injected within or in proximity to the lesion. Once the seed is injected, a confirmatory mammogram is taken to verify the seed's presence (Fig. 2).



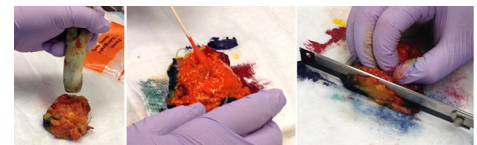
[Fig. 2] Verification of the radioactive seed within the breast specimen. Adjacent biopsy clip can be seen.

- In the OR, a Gamma Detection System (GDS) probe (Fig. 3) is used to scan the breast in the vicinity of the surgical site to determine the precise location to be excised based on the strongest source of gamma radiation.



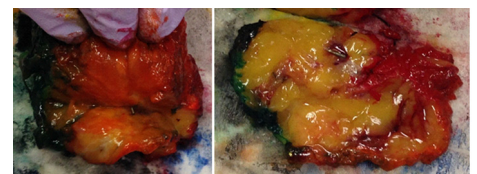
[Fig. 3] Gamma Detection System probe

- The seed-containing lesion is excised and sent to pathology after a confirmatory radiograph.
- The PA first confirms the seed's presence using the GDS probe, then inks and sections the specimen (Fig. 4).



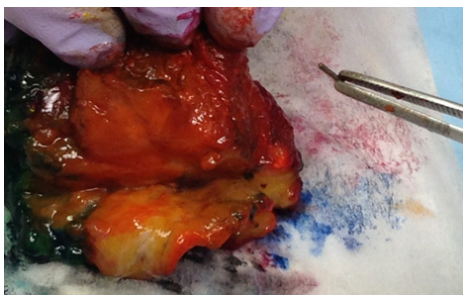
[Fig. 4] The specimen is probed, verifying the seed's presence, then inked and sectioned.

- Throughout sectioning, a diligent watch is kept for the seed. Any visual or physical cue helps to locate the seed (Fig. 5).



[Fig. 5] The radioactive seed is visualized during sectioning.

- The seed is removed (Fig. 6) and scanned with the GDS probe to confirm radioactivity. The seed is packaged within a vial bearing the seed's prescription number and stored in a lead pig (Fig. 7).



[Fig. 6] The radioactive seed is removed from the specimen.



[Fig. 7] The seed is placed in a vial and stored in a lead pig until disposal by radiology.

- The specimen is scanned with the GDS probe to verify that the seed is removed and that no additional seeds are present.

Results (Fig. 8)

The utilization of seed localization has almost completely replaced the use of traditional wire localization as well as provided a less-invasive procedure for the patient when localizing breast lesions pre-operatively. PAs are used to not only provide consistent and reliable seed removal,

but also to establish and verify competencies of the medical staff. Natural language searches of the laboratory information system were conducted to select lumpectomy cases using needle localization (NL) versus radioactive seed localization (RSL). There were 50 NL cases performed by seven surgeons in January and February of 2012 and only one RSL case. There were no NL cases and 63 RSL cases performed by seven surgeons in January and February of 2013. Five surgeons had performed both NL cases in 2012 and RSL cases in 2013. Of the five surgeons who had performed both NL and RSL, only three had performed a significant enough number of both case types to allow for statistical comparison. Our institution policy dictates that resections of non-invasive lesions are entirely submitted if <8 cm and invasive lesions are entirely submitted if <2 cm.

Conclusion

The use of radioactive seeds in breast localization has markedly improved the process of performing segmental mastectomies due to its ease of use and because it is a less invasive method than wire localization. The seed can be inserted days before the planned surgery and is virtually undetectable by the patient. The review of data shows a significant decrease in the size of the resection specimen and concomitant number of blocks processed. In addition, the incidence of additional margins taken at the time of initial surgery increased. The exact reason for this increase is unclear. ■

Peer Review Notes:

Received March 2014 and accepted for publication August 2014

All Surgeons	Needle localization	Seed localization	% change
Approximate average volume (cm ³)	77.5	72.8	-6.1%
Average # of blocks	25.5	19.6	-23.3%
% of cases where a new margin was taken at initial surgery	6%	25%	316.7%

Rate of Change in Number of Blocks Submitted for Initial Lumpectomy

	Needle Localization	Seed Localization	% change
Specimens for Biopsy Proven Invasive Lesions	29.0 blocks	20.5 blocks	29.3% decrease
Specimens for Non-Invasive Lesions	26.1 blocks	17.8 blocks	31.8% decrease

Rate of Additional Margins Taken During Initial Surgery

	Needle localization	Seed localization	% change
Surgeon A	10%	23%	130 % increase
Surgeon B	9%	17%	88% increase
Surgeon C	0%	36%	360% increase

[Fig. 8] A comparison of needle localization and radioactive seed localization.

>> Cover article continued from page 5

the recognition of additional cases providing more data on the clinicopathologic and prognostic features of this uncommon lesion that should not be misinterpreted and confused with other aggressive hepatic malignancies.

ACKNOWLEDGMENT

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BOOK REVIEW

Bad Faith: When Religious Belief Undermines Modern Medicine

Written by Paul A. Offit, MD

REVIEW BY CHET SLOSKI



Chet Sloski

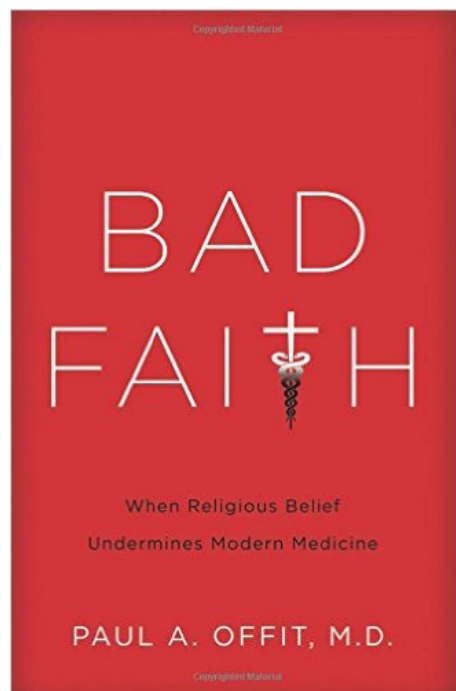
"Men think epilepsy divine, merely because they do not understand it. But if they called everything divine which they do not understand, why, there would be no end of divine things."

---Hippocrates

Each year, thousands of Americans refuse medical care for their children in the name of God. In his new book, *Bad Faith, When Religious Belief Undermines Modern Medicine*, Paul A. Offit MD, examines some of the more tragic cases where children have paid the ultimate sacrifice for their parent's hardheaded religious beliefs. Offit focuses on children because, in addition to being a pediatrician, he believes that adults forgoing medical care for themselves is one thing; but parent's forgoing medical care for a child is quite another. Offit's focus is to understand why we allow this to happen; why we allow people to claim they are acting in the name of a benevolent God when they assuredly are not.

I don't know if Offit is religious or not, but he makes it clear that he finds the religious sentiment often worthy of praise and has learned that, "...to be truly religious is to be humane." He calls the hero of his book not science or doctors, but religion itself. Mainstream religions would be hard pressed to find any objections with the contents of Offit's book. Those who might find objections are the splinter religious denominations—some of whom he calls destructive cults—those who cherry-pick passages from their respective holy books to justify their beliefs, while curiously ignoring contradictory passages.

Christian Science holds that disease is unreal because God did not make it, and God is good, and God is the only power. Disease is a mere illusion. You are a perfect image of God so you can't be ill. Founded by Mary Baker Eddy in the late 1800s, by 1925 Christian Science counted more than 200,000 adherents. Eddy used the term "science" because healings could be demonstrated; if you prayed and your disease went away, it had been "demonstrated." And it was called "Christian" because healing follows the ministry of Jesus. But whereas mainstream Christians profess that Jesus died for their



sins, Christian Scientists believe Jesus died to prove diseases are not real.

According to Offit, the success of Christian Science in the late 1800s and early 1900s can be explained in part by the doleful state of medicine at the time. Antibiotics, insulin, and the rabies vaccine were in the future. Many treatments consisted of emetics, bloodletting, and corrosives. There were no standards and no hospital accreditation. Ben Franklin suggested that prayer worked because it allowed people to avoid doctors. Christian Science came along and put the power to heal in the hands of the people. Medical science, of course, would quickly outpace Christian Science. But despite amazing medical advances, Christian Science remained soundly in the past; as it does to this day.

Rita and Doug Swan were Christian Scientists. Highly educated, Doug received a PhD in mathematics from the University of Vermont, and Rita a PhD in English from Vanderbilt. In 1976, Rita became pregnant with her second child. During her fourth month of pregnancy she suffered severe abdominal pain on her left side. Christian Science allowed for prenatal care, so she went to a doctor. (Mary Baker Eddy had

allowed doctors to attend Christian Science births following a lawsuit involving the deaths of a mother and her newborn.) The doctor suggested she get an ultrasound and suspected Rita had an ovarian tumor or cyst.

Rita sought out a Christian Science practitioner who assured her that the mass was just an illusion. After several intense sessions of Christian Science prayer, Rita had her ultrasound. The tumor was apparently gone. Rita thought Christian Science had wrought a miracle. It had been "demonstrated." Rita and her practitioner were beside themselves; the doctor was less so. He thought Rita's ordeal was not over. Six weeks after Rita gave birth, the doctor felt the growth again. The pain returned, worse than ever. She declined surgery, but asked the doctor for pain medication which was allowed since Mary Baker Eddy had used pain medicines for her kidney stones. (Kidney stones are apparently not an illusion.) The doctor refused her "medication only" request. Rita subsequently had the emergency surgery (the adults often do, children often don't). But she paid a price. The church placed her on probation and she was no longer allowed to hold meetings at her church or teach Sunday school.

Finally, with the probation over, Rita was welcomed back into the church, but would soon face another dire test. In 1977, her young son Matthew had trouble walking and started vomiting; prayer was not helping. Rita's church practitioner told her Matthew's fever was a manifestation of Rita's fear, her failure to fully embrace God and His majesty. Simply put, Matthew's fever was hung on Rita. It got to the point where Matthew had not sat up, crawled, or walked for three days; his fever was spiking. The church practitioner said, "If you're relying radically on God, it doesn't make any difference what the evidence is." But it got to the point where Rita and Doug decided they either had to change church practitioners or turn to medicine; *materia medica*, as Mary Baker Eddy scientifically called it. They were aware that Christian Science practitioners are instructed not to pray for anyone who voluntarily accepts medical care. They decided on switching practitioners. The new practitioner believed she knew why Matthew was not getting better: Rita had never resolved a distant relationship with her father. If Matthew was to be healed, Rita had to write a conciliatory

letter to her father. This practitioner raved that she had once healed gallstones by getting a patient to confess resentment toward a relative. Believing this to be tangible proof, Rita wrote the letter.

As Matthew got worse, the practitioner seemed to give the Swans a way out. "Maybe Matthew has a broken bone in his neck." Christian Scientists are allowed to see doctors for broken bones because, imaginary or not, broken bones are painful. They took Matthew to a hospital and were at once swarmed by doctors and nurses. The only answer Rita gave to the doctor's request for specific information was that Matthew needed to be checked for a broken bone. Rita called her practitioner to let her know what was happening. She was berated for taking him to a hospital. "You could have just taken him to an X-ray clinic!" snapped the practitioner. The practitioner immediately dropped the case as Christian Scientists must do when one receives medical care.

Matthew had bacterial meningitis. Surgery showed Matthew's brain had multiple abscesses. The only hope was to administer antibiotics. A subsequent EEG showed that Matthew had suffered irreversible brain damage.

To Rita's church, the inability of the hospital to cure Matthew was evidence that medical science could not heal him either. They closed ranks against her and Doug. On Thursday, July 7, 1977, Matthew Swan died of a treatable illness. Hurt and disillusioned, Doug and Rita got out from under it, left Christian Science, and joined another church. Rita became a fierce advocate for children from then on. In 2012, Dr. Robert W. Block, president of the American Academy of Pediatrics, awarded a plaque to Rita—the President's Certificate for Outstanding Service.

So how did Doug and Rita, two otherwise intelligent people, forgo medical treatment for their son? Despite their PhDs, they admittedly had an amazing ignorance about the workings of the human body. Rita had never been to a doctor as a child. She did not know a fever could be a sign of an infection. Whenever a news program came on that talked about medicine or epidemics, Doug and Rita were taught to turn off the TV. Christian Science teaches that ignorance of disease is a virtue. They were instructed by their church to isolate themselves from all forms of medical information. Disease is an illusion. Rita rightly referred to Christian Science as a "hardworking religion."

Today Christian Science is seeing dwindling numbers. Exact numbers are hard to pin down, but best estimates are between 30,000 and 100,000 members. Their official website states that, "People who practice Christian Science are free to make their own



choices about what to think and do in each situation, including health care." Well, sure. They won't physically stop you. But they can, and will, excommunicate you if you deviate from church doctrine. The Christian Science Church telling you that you can make your own decisions on healthcare is akin to the Catholic Church telling you that you can make your own decisions on abortion. And speaking of the Catholic Church and abortion...

According to Offit, there are moments when outlawing the perceived absolute evil of abortion becomes an absolute evil in itself. In 2009, a mother of four entered Saint Joseph's Medical Center, a Roman Catholic hospital in Phoenix, Arizona. She was eleven weeks pregnant and gravely ill, suffering from a disorder that caused the right side of her heart to fail. The problem had been exacerbated by her pregnancy. It soon became clear that without an abortion both the mother and her unborn child would die. The medical ethics board was consulted. The board's director, Sister Margaret Mary McBride, signed off on the abortion, cognizant that she would be violating a fundamental principle of her faith. She was also cognizant that if she didn't, the woman would surely die. Not wanting four children to lose their mother McBride approved the abortion and the woman's heart failure resolved.

Enter Thomas J. Olmsted, bishop of the Catholic Diocese of Phoenix. He forthwith excommunicated McBride. "The Catholic Church will continue to defend life and proclaim the evil of abortion without compromise," he said. But the administrators of St. Joseph's Hospital were not intimidated. They replied, "If we are presented with a situation in which a pregnancy threatens a woman's life, our first priority is to save both patients. If that is not possible, we will always save the life we can save, and that is what we did in this case." Even the parent organization of St. Joseph's Hospital, Catholic Healthcare West, also supported Sister McBride. As a consequence, on December 21, 2010, Bishop Olmsted announced that the Diocese was severing ties with the hospital because it had provided care that was inconsistent with "authentic Catholic moral teaching." The bishop—who was not a doctor—further stated that, "I am further concerned by the

hospital's statement that the termination of a human life was necessary to treat the mother's underlying medical condition. An unborn child is not a disease."

So what exactly is the *ex-cathedra* Catholic doctrine regarding abortion in cases where a pregnancy endangers a woman's life? In cases of an ectopic pregnancy, the Church allows the removal of the fallopian tube, saving the mother's life and causing the death of the fetus. Similarly, if the pregnant mother requires a hysterectomy for uterine cancer to save her life, the procedure is permitted. If she needs chemotherapy she is permitted to save her life at the expense of her unborn child. How are these situations different from the situation at St. Joseph's? The Church would say that in none of the aforementioned instances is the unborn child DIRECTLY aborted; the abortion is indirect. In the case involving Sister McBride, the sole purpose of the procedure was to abort the fetus. According to Offit, the logic here is somewhat obscure. And speaking of obscure logic...

Here's an ancient Jewish circumcision ritual you have probably never heard of; it's called *metzitzah b'peh* which means "sucking with the mouth." Stay with me here. The ritual dates back to the Babylonian Talmud, a fifth-century text that states, "The (*metzitzah*) is performed for the sake of the infant's safety. And if a *mohel* does not perform the suction (of the wound) this is deemed dangerous and he is to be dismissed." The Talmud does not mention how suction should be performed; the method is implied in the *Shulchan Arukh*—the most authoritative code of Jewish law written in the 1500s. One section, the *Yoreh Deah*, states that following circumcision, "We spit blood into the earth." Generally, whenever a holy book mentions blood, the zealot's ears perk up.

In 2012, a reporter for the *New York Times* witnessed and wrote about such a circumcision. After the *mohel* sliced off the foreskin, "...he took a sip of wine from a cup and bent his head. He placed his lips below the cut around the base of the baby's penis for a split second creating suction, then let the wine spill from his mouth out over the wound." One would assume the wine was envisioned as an antiseptic.

According to Offit, the ritual of *metzitzah* was practiced throughout the *middle* Ages. But by the nineteenth century, it had fallen out of favor. By then physicians knew the mouth was a harbor for germs and sterile technique was coming into vogue; but not everyone gave up the practice.

In 2004, New York City's Department of Health received a report about twin boys who had each suffered a herpes simplex virus infection. Officials found the boys had

BOOK REVIEW

Bad Faith: When Religious Belief Undermines Modern Medicine

Written by Paul A. Offit, MD

REVIEW BY CHET SLOSKI

(con't. from page 11)



been delivered by Caesarean section and had been circumcised when they were eight days old. One week later they developed blisters on their genitals, abdomen, and back. HSV-1 was isolated from both babies. One survived and one did not. Their mother and healthcare workers were all tested; none tested positive for HSV-1. Officials knew the twins were infected after they were born, but could not figure out how. But then a break; another infant from Staten Island was found to have herpes. It was subsequently found that all three babies had been circumcised by the same *mohel*, Rabbi Yitzchok Fischer, whose practice was to use his mouth to clean the circumcision wound.

In 2012, the CDC was dispatched to New York. This time eleven babies were infected with HSV-1. Two had died and two had suffered permanent brain damage. All had been circumcised by *mohels* who had used their mouths to suck off the blood. And all the cases occurred in a zip code that contained the largest population of Orthodox and ultra-Orthodox Jews. New York health officials later estimated that *metzitzah* was performed on about 3,600 babies in their city every year. Did officials then outlaw the procedure? No. They asked *mohels* who used their mouths to suck blood from an infant's penis to provide an educational pamphlet to parents describing the risk of acquiring herpes; sort of like a warning label on a pack of cigarettes.

Offit tells us the most vocal support against the practice of *metzitzah* came from the members of the Jewish community—most of whom were embarrassed and horrified that such a draconian, dangerous practice had survived. Rabbi Moshe Tendler, professor of Talmudic Law and Bioethics at Yeshiva University, called *metzitzah* “primitive nonsense.” “The ritual has nothing to do with religion.” Indeed, even in Israel, the practice is forbidden. To Offit, the interesting point here is that those defending the practice were not ignorant; unlike Christian Scientists they did not believe that herpes was an illusion. They knew full well that *mohels* could transmit herpes by sucking a baby's wound and the infection could lead to death. Yet they still practiced and defended it. As one defender

told Dr. Offit, “All medical procedures have side effects.” Offit replied that the choice to use one's mouth to clean off blood following a circumcision isn't a medical procedure—it's a religious ritual.

On to vaccinations. Caryn Still was a nine-year-old girl and one of hundreds of children attending the Faith Tabernacle Congregation School. Because the church rejects all forms of modern medicine, not one child in the school had been immunized. Their doctrine instructs members to “believe that the Bible is opposed to all means of healing apart from God's way.” The Church's pastor was Reverend Reinert. Among the Church's many accomplishments are a number of preventable deaths including a seventeen-year-old who died of a burst appendix after refusing surgery.

Caryn Still died from measles, but Reverend Reinert still refused to immunize his students. The authorities finally convinced him to at least give them a list of the names and addresses of the families attending his church. Meanwhile, nine-year-old Monica Johnson, a classmate of Caryn's, died from measles. Her father, Wayne, only called the police after she had stopped breathing. Wayne saw it as a test, “For strengthening of our character, for strengthening of our belief. That is why God has chosen her.” Immunization was against his faith, against his God. Wayne had ten more children living in his home, birth control also being against his religion.

The Health Commission, after telephoning dozens of families, found at least 129 students at Faith Tabernacle had come down with measles the previous month. The officials noted that the parents were “articulate, intelligent, and calm.” Most families had 6-12 kids because they did not believe in birth control. Many children were physically or developmentally disabled; they all had in-house deliveries.

A court order was granted permitting interns and residents at St. Christopher's Hospital for Children and The Children's Hospital of Philadelphia, to go door to door checking on the children. A court order gave the visiting doctors the telephone number of a

judge should legal action be needed for any child requiring hospitalization.

According to Offit, typically about one of every 1,000 children with measles dies from the disease. But in Philadelphia, in February 1991, four of the 150 children with measles whose parents attended a single church had died. The CDC sent a team of scientists to Philly. At first they considered that it was a virulent strain of measles causing the unusually high death rate. But they soon found out the children were dying because they were not getting intravenous fluids for their dehydration or oxygen for their pneumonia.

When it was all over, the outbreak in Philadelphia affected more than 1,400 people. Among church members, 486 people were infected and six were killed by measles. Among non-church members, 938 people were infected and three were killed. All nine fatalities were children. Because they hadn't been vaccinated, the attack rate among church members was a thousand times higher than that in the surrounding community.

In 2013, the CDC identified 30,000 children whose parents had chosen not to vaccinate them for religious reasons. In California, where I live, we recently had an outbreak of measles centered around the happiest place on earth: Disneyland. One hundred came down with measles and the epidemic was linked to non-immunized children. As I write this, California just passed a law mandating that beginning in 2016, all school children must be vaccinated; no religious or personal exemptions, only medical exemptions. California, along with strange bedfellows Mississippi and West Virginia are now the only three states that don't allow for religious or personal exemptions for vaccines.

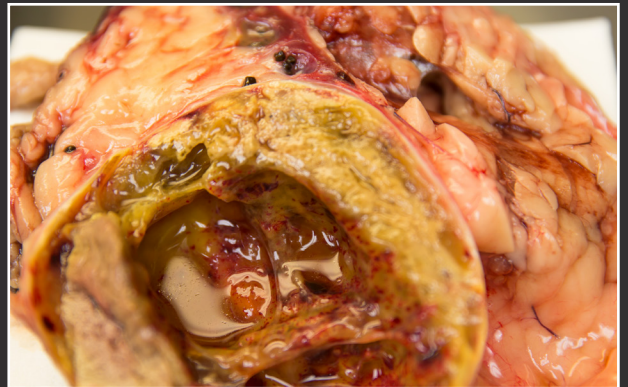
Is there a way to convince otherwise intelligent people that if God is indeed the prime healer, it is through physicians and modern medicine that He performs such healings? I don't have an easy answer. But in closing I will offer a quote. It is not from a doctor or scientist, but from a carpenter:

“It is not the healthy who need a doctor, but the sick.”

—Matthew 9:12 ■

Gross Photo Unknown

A 53-year-old male presents with flank pain and blood in his urine. X-rays show stones in his right kidney, as well as an encapsulated mass that is partially calcified.



Quiz

1. Which of the following are in the differential diagnosis?
 - a. Renal cell carcinoma
 - b. Oncocytoma
 - c. Cystic neoplasm
 - d. All of the above
2. Which of the Bosniak stages of cystic renal masses includes complex cystic lesions with irregular calcifications and irregular borders?
 - a. Two
 - b. Three
 - c. One
 - d. Four
3. Immunostains positive in cases of multilocular cystic renal cell carcinoma include the following:
 - a. CD10
 - b. Vimentin
 - c. Epithelial membrane antigen
 - d. All of the above

Answers found on page 23 >>



Excited for Toronto!

by Heather Manternach, Conference Committee Chair

What is the largest city in Canada and the fourth largest city in North America? What city is considered to be one of the most multicultural cities in the world, with more than 140 languages and dialects spoken there? What city has a nearby island that comprises the largest urban car-free community in North America?

You guessed it...TORONTO!! We are excited to be heading to Toronto for the 41st Annual Continuing Education Conference, at the Fairmont Royal York, August 28 - September 4. We have a great lineup of speakers, presenting on various topics, such as pediatric GI pathology, lung cancer updates, and tissue banking. Three offsite workshops are available, focusing on cardiac pathology. Be sure to visit the poster sessions Tuesday and Wednesday afternoons. This is a new opportunity for additional credits. View the posters, meet the presenters, and answer a quiz to earn CE credits. As always, reconnect with your fellow PAs and new students at the Welcome Party on Sunday evening, and learn about the latest products at the Happy Hour with the Exhibitors on Wednesday evening.

Toronto is such an exciting and fun city, with so much to offer. From the more than 8,000 restaurants, to museums and theatres, to various sporting activities, there is never a dull moment! Plus the wonderful Harbourfront is just a quick walk from the hotel – stroll on the boardwalk, take a cruise on Lake Ontario, or relax in one its many parks.

Here are a few highlights of the many things to see and do in Toronto:



Toronto Harbor

Bata Shoe Museum - Discover the treasures of North America's charming and surprising shoe museum. The BSM has more than a thousand shoes and related artifacts on exhibit. The BSM celebrates the style and function of footwear in four impressive galleries. Footwear on display ranges from Chinese bound foot shoes and ancient Egyptian sandals, to chestnut-crushing clogs and glamorous platforms.

Royal Ontario Museum - Canada's largest museum of natural history and world culture presents engaging galleries of art, archaeology and natural science from around the world.

Royal Alexandra Theatre - This is the oldest continuously operating legitimate theatre in North America. Check out the Broadway play, *Kinky Boots* while in Toronto!

Sony Centre for the Performing Arts Canada's largest performing venue hosts a variety of entertainment including dance, musical concerts, spectacles and popular children's shows.

Hockey Hall of Fame - Features hands-on games, theatres, the Stanley Cup, and the finest collection of hockey artifacts from around the world.



Hockey Hall of Fame

Toronto Blue Jays Baseball - Catch a game at the Rogers Centre. The Blue Jays are in town all week and play the Detroit Tigers, Cleveland Indians, and the Baltimore Orioles!

Casa Loma - Experience the elegance and splendor of the Edwardian era at Casa Loma, the only full-sized castle in North America.



Baseball at Rogers Centre

St Lawrence Market - Named the #1 food market in the world by National Geographic.

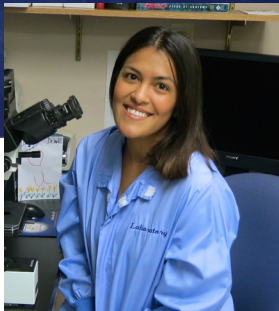
CN Tower - The third tallest tower in the world and the tallest free-standing structure in the Western Hemisphere. For those adventurers -- take a walk on the OUTSIDE edge of the tower with the Edge Walk at the CN tower.

Ripley's Aquarium of Canada - The aquarium features several aquatic exhibits including a walk-through tank. The aquarium has 1.5 million gallons of marine and freshwater habitats from around the world. The exhibits hold 13,500 exotic sea and freshwater specimens from more than 450 species.

To make getting around easy, use the PATH underground pedestrian walkway which links 19 miles of shopping, services, and entertainment. Enter the PATH walkway right at The Fairmont Royal York! You can get from the hotel to the CN Tower without stepping outside!!

I hope you are excited about what we are able to offer at this year's conference! I look forward to seeing you in Toronto! ■

40 Under Forty Honorees



Alejandra Meza, MHS, MLS(ASCP)^{CM}, PA^{CM}



Jon Bakst, MBA, MHS, PA(ASCP)^{CM}

We caught up with Alejandra Meza and Jon Bakst to chat with them about their recognition as two of ASCP's 40 Under Forty honorees.

What does this recognition mean to you?

AM: I am honored to be included with such an accomplished group of laboratory professionals.

JB: As a pathologists' assistant, you do not expect this type of recognition; however, being acknowledged on this scale was an incredible achievement in my professional life.

How will this recognition impact your future in the PA profession?

AM: My PA friend and I hope to present at future AAPA conferences. We would love to share our experiences, including all the challenges we encountered when working internationally. One humbling lesson we quickly learned is, "everything is important!"

JB: In my current role as Administrative Director of Clinical Laboratories, I am unfortunately no longer at the bench, cutting. It is my hope that Alejandra and I are just the first in a long line of APA fellow pathologists' assistants who will receive this recognition and similar awards. The more we grow professionally, and the more we are acknowledged (through publications, awards, speaking engagements) for our patient care contributions, the greater the positive recognition for the profession and the AAPA.

Are there changes you want to see in the Pathologists' Assistant role?

AM: I strongly believe the PA profession needs to be recognized globally. Pathologists' assistants have proven to be a valuable asset within the United States medical community for many years, due to the numerous benefits we provide. Introducing this profession to other regions such as Africa, Asia, and South America could improve patient care and laboratory efficiency. It could also

dramatically ease the problems associated with pathologist scarcity.

JB: As healthcare and laboratory medicine evolve so will the pathologists' assistant role. Today, we are seeing more and more of our members in leadership roles within their respective institutions. Pathologists' assistants have a unique and comprehensive skill set and we have an opportunity to use our knowledge to expand beyond the bench into management/leadership, molecular and genomics, biobanking and research, and to develop specializations within the realm of gross pathology.

How would you describe your experience of being a Pathologists' Assistant?

AM: I was fortunate to land a great position with a private pathology group in Utah. The hours are flexible, I work four days a week, with great benefits and a nice mix of specimens. Working these limited hours has allowed me the time and energy to undertake other projects that I am passionate about.

Two months ago I participated in Healthy Kids Day sponsored by the YMCA. My friend and I set up a "heart booth" with pig hearts. I love props! We demonstrated cardiac anatomy, and showed both parents and kids the reason heart attacks occur. Many were shocked at how delicate and small the cardiac arteries are. We also had vials filled with yellow food coloring and glue to demonstrate the atherosclerosis process.

Future projects include teaching a summer "Careers in Laboratory Medicine" extension class to high school students at the University of Utah. I would also love to present at other international conferences promoting the PA profession.

JB: It has been 14 years since I graduated and my professional journey has been exhilarating. The profession has enabled me to touch thousands of patient lives in ways that no one else but a fellow pathologists' assistant would realize. I have been

fortunate to work side by side with great colleagues, both in my place of work and while volunteering in various AAPA roles.

Why would you recommend the PA profession?

AM: The PA profession requires careful thought and a curious sense of investigation. We are always looking for the atypical. It's a profession that is respected and allows for a decent living.

JB: The opportunities for pathologists' assistants are numerous and growing. You have the opportunity to make a career out of being a pathologists' assistant, and have the flexibility to work for various organizations and at various levels that align to where you are, both in your personal life and professional life. ■

Congratulations to the 2015 Journal Award Recipients

First Place: Bing Miller

Bilateral Malignant Brenner Tumor: A Report of a Rare Case with Literature Review

Second Place: Laurie Mann

Rib Lesion in a 45-Year-Old Woman

Third Place: Barbara Dufour

Is PSA Passé? The Use of Urinary PCA3 Biomarker for Prostate Cancer

PA Day Recap

by Charlene Gettings, PR Committee Chair



Take a look at how some of your fellow PAs were appreciated on the 2nd Annual PA Day!
Each year, let's aim to make the celebration bigger than the year before!

Keep sharing on:



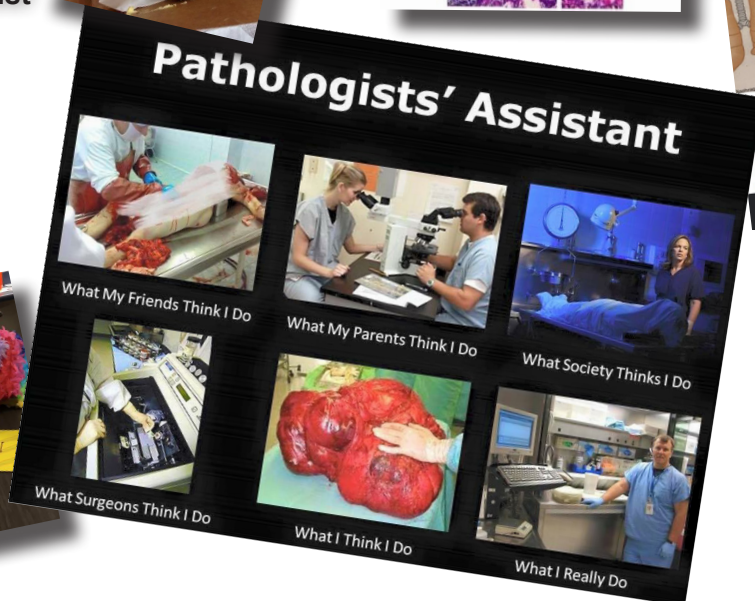
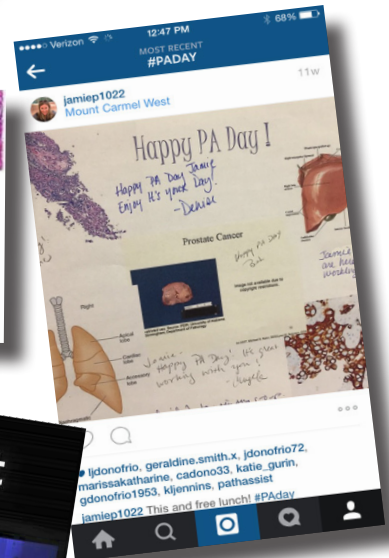
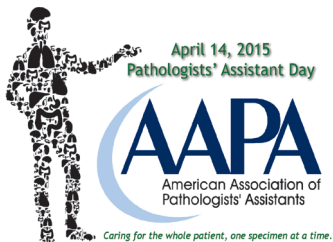
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PR Booth Travels

The PR Committee travels each year to major pathology-related conferences. Our goal is to promote the Pathologists' Assistant profession, build relationships with exhibitors, and endorse our annual conferences.

If you are in the area and would like to volunteer at the AAPA booth, please contact the AAPA Central Office to schedule your commitment!

CAP '15

**October 4-6, 2015
Gaylord Opryland
Nashville, TN**

ASCP

**October 28-30, 2015
Long Beach Convention Center
Long Beach, CA**

San Diego

AAPA Fall Conference

2016

#PAContEd



September 10 - 16, 2016

**2017 AAPA Fall Continuing
Education Conference**



San Antonio

September 23 - 29, 2017

**Grand Hyatt San Antonio
San Antonio, Texas**

#PAContEd

MEMBER SPOTLIGHT



Tara Bonde

Tara has been a PA for 15 years and an AAPA member since 2012. She is employed with Hospital Pathology Associates in Minneapolis, MN.

Q In what type of facility do you practice (private, community hospital, autopsy, per diem)?

A I work for a private pathology practice that services four metro hospitals and several smaller outlying hospitals and clinics.

Q What's your favorite specimen to gross?

A Anything unusual or challenging. Also, most GI specimens.

Q What's your least favorite specimen to gross?

A Prostates. They are pretty boring.

Q What's your most memorable case?

A Resections for foreign body removal are always memorable. I once had an ileocecal resection from a patient who was having dental work done, when the drill bit came off, was swallowed and eventually made its way to the very tip of the appendix.

Q Which direction do you see the profession headed in the next five years?

A I see it continuing to grow as more and more pathologists realize the value in employing pathologists' assistants. Physician extenders are where it's at!

Q Where did you go to high school and college?

A I grew up in Sioux Falls, South Dakota where I attended Lincoln Sr. High School. For college, I attended the University of Minnesota-Twin Cities where I earned a B.S. in Biology.

Q What was your first job?

A My first job was at the VA Medical Center in Minneapolis, where I trained on-the-job with the great Dick Dykoski, PA.

Q Where would we most likely find you on a Saturday night?

A Enjoying a cocktail or two with family and friends.

Q If you weren't a PA, what other line of work would you enjoy?

A I always joke and say that my next job will be breeding Labrador retrievers.

Q What do you like most about being a PA?

A I enjoy the opportunity to be an integral part of the healthcare community, working with amazing surgeons and pathologists. I like the level of responsibility that I have with regards to patient care. I really like the variety of specimens that we get. Pathology is the "meat and potatoes" of medicine, with lots of interesting cases each and every day. ■

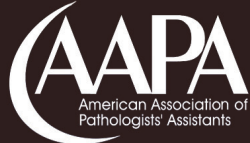


AAPA'S ANNUAL PHOTO CONTEST

Calling all shutterbugs - show us your stuff!

*Contest opens August 15
Submissions are due October 15*

>> Check website for details <<



AAPA Calendar

August 29 - September 4
AAPA 41st Annual Continuing Education Conference, Toronto, ON

September 15
CE article released this month

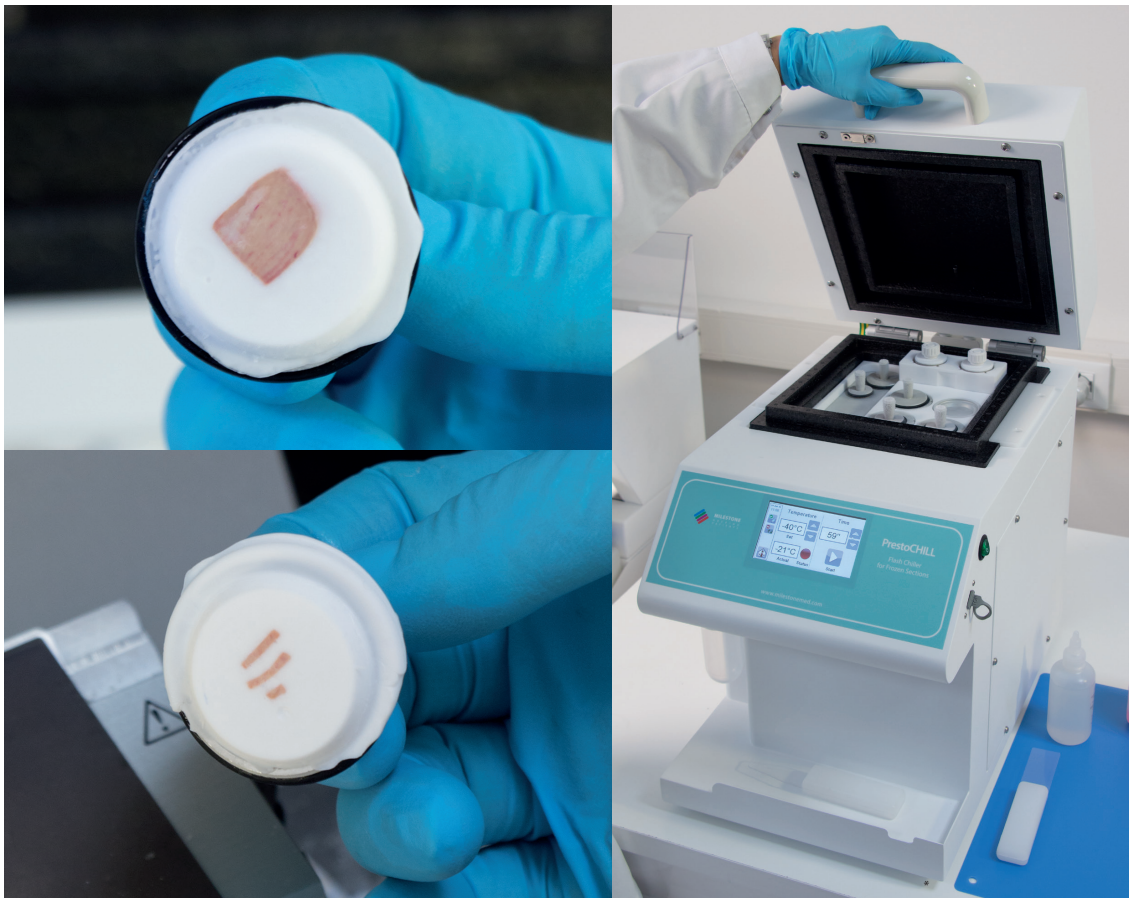
October 1
Q4 Journal submission deadline

October 4-6
Exhibit booth travels to CAP, Nashville, TN

October 15
CE article released this month
Photo Contest deadline

October 28-30
Exhibit booth travels to ASCP, Long Beach, CA

November 15
CE article released this month



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Executive Director REPORT

Michelle L. Sok, CAE
Executive Director
executivedirector@pathassist.org

As mentioned last quarter, the Board of Trustees (BOT) casts the vision for this Association and the committees and staff at the office are then tasked with the implementation. To expedite the implementation beyond what can be accomplished through emails and teleconferences, I have found it extremely beneficial to bring together the key players to develop our implementation strategy. We call these face-to-face meetings Working Weekends.

Much of our current strategic plan is focused on PR-related items, and the IT function is becoming more and more integral to everything we do. As a result, I asked the committee heads to come together in mid-June for a joint PR and IT Committee Working Weekend at our office. The focused solid block of meeting time, together with the ability to draw from our various staff members involved in the day-to-day work, allowed us to go through an extensive list of agenda items in a short few days. We accomplished a tremendous amount; ultimately catapulting us forward on our strategic plan objectives. Thank you to Charlene, Joel, Lara, and Ryan for the time you invested and your unwavering commitment to move this association and the profession forward! ■

2015-2017 AAPA Strategic Plan

Goal #1 – Education

Be the leader in providing PA-specific education that informs on relevant medical advances, is patient centered, and supports an expanded scope of practice.

BOT Oversight: Steve Rath

Objective #1 - Improve Education at the Fall Conference

- The Conference and Education Committees are jointly working together on improving the Fall Conference including expanding our speaker recruitment efforts, ensuring that topics are relevant, introducing new offerings, and exploring a restructure of our schedule, all with a focus on member engagement.

Objective #2 – Improve Written Content

- *Beyond the Bench, Volume III*, is scheduled to be released at the end of this year.
- The Education and Publications Committees are on track with incrementally releasing 15 free CEs and 4 journals over the course of this year.
- The Education, Membership, and Publications Committees came together to jointly work on offering several scholarships this year, all with the goal of generating more high-quality CE content.

Goal #2 – Communication

Be the leader in providing PA-specific communication/information to enhance membership awareness of association accomplishments, along with general issues in pathology and healthcare, while encouraging communication between members.

BOT Oversight: Bill Ahlfeld, Karen Riviello

- During our joint PR and IT Working Weekend, the committees reviewed the results of the app survey and made a recommendation to the BOT. We also discussed expanded communications development and reporting.
- The Membership Committee is focusing on student engagement, including updating the student liaison PowerPoint and more regular contact with the programs.

Goal #3 – Professional Support

Be the leader in providing PA-specific professional support.

BOT Oversight: Bill Ahlfeld, Karen Riviello, Jana Sovereign

- A SurveyMonkey salary survey is scheduled to be released in the coming weeks, and a Membership Task Force has been assembled to explore improving the salary survey for next year's release.

- During our joint PR and IT Working Weekend, the committees reviewed the website and analytics reports in conjunction with the feedback from the app survey and a recommendation was made to the BOT.

Goal #4 – Governance

Focus on updating our core documents and volunteer management.

BOT Oversight: Lisa Whitehead

- The Administration Committee is working on reviewing our core documents, while several of the committees are working on reviewing their procedures, reassessing their volunteer needs, and creating volunteer job descriptions.
- Beginning at the Toronto conference, we will be placing more of an emphasis on encouraging members to Get Involved. Regardless of where each member may fall on the volunteer continuum, there is an avenue for everyone to Get Involved and actively participate in their organization.
- We are also reviewing our current committee structure in an effort to improve upon our implementation efforts with a more streamlined infrastructure.

Goal #5 – Public & Professional Awareness of the Profession

Increase public and professional awareness of the profession.

BOT Oversight: Jana Sovereign

Objective #1 – Increase Professional Awareness of the Profession

- We are ramping up our efforts to complete our Grossing Guideline project by the end of the year.
- The BOT is continually looking to explore new collaboration opportunities.

Objective #2 – Increase Public Awareness of the Profession

- During our joint PR and IT Working Weekend, the committees discussed promotion of the profession overall, as well as expanding our PA Day efforts. The committees also discussed efforts to promote the career and create promotional videos.
- The Membership Committee is on track to release a 2016 AAPA Calendar.

Goal #6 – Non-Dues Revenue

Expand sources of non-dues revenue.

BOT Oversight: Michael Mazzotta

- Several committees are exploring new revenue generating opportunities that support our members.
- The CFO is anticipating a project based budget roll out for 2016.



Board of Trustees REPORT

Jon H. Wagner
Board of Trustees Chair
botchair@pathassist.org

In the setting of medical practice, it seems self evident that professional certifications offer the possibility of validating individual competencies. As a consequence, certifications often represent an earmark of employability and, in some instances, comprise regulatory thresholds which serve to validate who can, or cannot, lawfully practice.

Recently, the American Society for Clinical Pathology Board of Certification (ASCP BOC) announced the desire to take their menu of domestic certification offerings and develop programs to offer international certification variants. Pathologists' assistants were included among the potential international certifications. In keeping with the collaborative relationship we enjoy with the ASCP BOC, prior to any progress, the ASCP BOC contacted the AAPA to discuss the implications.

At first glance, international certification of pathologists' assistants seems a natural progression. As our profession improves and evolves domestically, it seems logical that the international community would desire the same outcomes. If done correctly, the process would validate the competencies of internationals functioning as pathologists' assistants, which would carry benefits for the employee (making the individual more desirable), and employer or regulator (by ensuring a minimum competency is achieved). And these benefits, by extension, could serve to benefit patients. When the conversation isolates to those ends, there are no arguments opposing international certification.

However, while these positives are compelling, the AAPA must consider both sides. Not just what the international community could benefit from, but how an international certification might impact the current pathologists' assistant certification program.

In considering the potential negative implications of international certification for pathologists' assistants, the AAPA Board of Trustees questioned those involved with the ASCP BOC regarding the international certification process. Without belaboring the details, what was proposed by the ASCP BOC for an international pathologists' assistant certification, was the use of the existing ASCP BOC Pathologists' Assistant Certification Examination, coupled with new exam eligibility criteria that, in order to include internationals, would eliminate the requirement for graduation from a NAACLS Accredited Pathologists' Assistant Training Program.

Thus, while the intent for the certification was to benefit the international community, and, the naming of the certification would include an "international" designation, the validating exam for both the international and existing certification program would be essentially identical. Therefore, those able to pass the international certification exam would receive the validation potential of the certification without completing the "gold standard" of preparation – namely, successful completion and graduation from a NAACLS Accredited Pathologists' Assistant Training Program.

I think it is fairly obvious that the proposed construct could introduce competition for the existing certification. This point was made crystal clear by the Pathologists' Assistant Training Program Directors, who unanimously opposed the proposed international certification on the premise that they regularly receive requests and inquiries from individuals desiring to become certified pathologists' assistants, but unwilling to submit to the rigors of a NAACLS Accredited Pathologists' Assistant Training Program. Inferred in the training program directors comments is that there could be a sizeable contingent of individuals in the United States who, under the less stringent education requirements, would attempt to sit for the

international exam, acquire certification, and utilize the status to obtain employment. In addition to the potential employment competition issue, these individuals would not offer to patients the benefit of the educational experience offered by the NAACLS Accredited Pathologists' Assistant Training Programs.

Having considered the potential outcomes, the Board of Trustees voted unanimously in opposition to the international certification proposal. And, in keeping with our collaborative relationship with the ASCP BOC, the ASCP BOC suspended the international certification track for pathologists' assistants.

In the end, I think one of the larger lessons learned from this experience is the importance of our independence as an association of practitioners – composed of pathologists' assistants alone. This, in turn, allows us to be effective in our interdependent interactions. Adding international certifications may support the mission of the ASCP BOC. However, the "pause" taken by the ASCP BOC to reach out to the AAPA gave us a chance to provide our voice. And, quite frankly, without the AAPA and Pathologists' Assistant Training Program Directors input, the international certification could have progressed without resistance. Not because ASCP BOC would intentionally introduce a conflicting program. Rather, because the ASCP BOC does not know the full details of our history, current challenges, or profession. Our independence gives us a chance to protect what we do, who we are, and what we are about. It gives us undiluted strength, and allows us to construct healthy collaborations, protecting our present circumstance and giving shape to our future. This is one thing your membership supports, and the board is thankful for the part you play in helping to protect our important position in healthcare! ■

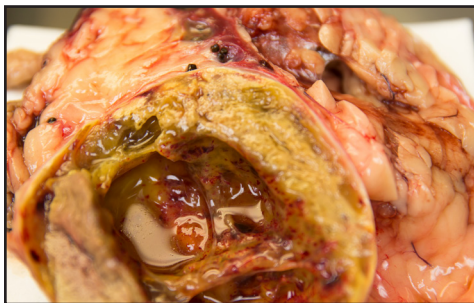
Gross Photo Tutorial



Cystic Renal Cell Carcinoma

It is thought that many people over the age of 50 have at least one renal cyst. Renal cysts can be benign and asymptomatic, or large and painful. Radiology uses the Bosniak classification system to categorize cysts in the kidney. There are four classes of cysts in this system, ranging from simple and benign, to likely malignant. The class correlating with the gross image

of this article is Class 3, cysts including thick, irregular borders, irregular calcifications, and thickened or enhancing septa with multilocular form. Extensive sampling of cystic neoplasms is important, because renal cell carcinoma can have a gross appearance of a cyst. Immunohistochemistry stains, including Vimentin, EMA (epithelial membrane antigen) and CD 10 are positive in multilocular cystic renal cell carcinoma. Cystic renal cell carcinoma patients usually have a better prognosis, since the cystic form of RCC has a low nuclear grade and is usually confined to the kidney. ■



Gross Photo Unknown

Quiz Answers:
(from page 13)

1) D 2) B 3) D

NAACLS Accredited Pathologists' Assistant Training Programs

NAACLS

National Accrediting Agency for Clinical Laboratory Sciences



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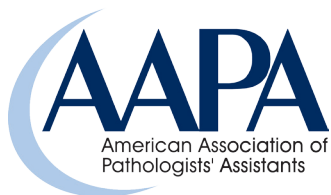
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