

PRACTICAL SUMMARIES IN ACUTE CARE

A Focused Topical Review of the Literature for the Acute Care Practitioner

Current Controversies in the Management of Peritonsillar Abscesses

Authors: **Teresa S. Wu, MD**, Director of Simulation Education and Training, Graduate Medical Education, Ultrasound Faculty and Attending Physician, Department of Emergency Medicine, Orlando Healthcare, Orlando, Florida; **Cindy May Hird, MD**, Emergency Medicine Resident, Orlando Healthcare, Orlando, Florida.

Peer Reviewer: **Ronald M. Perkin, MD**, Professor and Chairman, Department of Pediatrics, Brody School of Medicine at East Carolina University, Greenville, North Carolina.

Introduction

A PERITONSILLAR ABSCESS (PTA) is the most common deep infection of the head and neck, with an annual incidence of more than 50,000. The infection often begins as a superficial infection of the oropharynx that develops into a tonsillar cellulitis during the initial stages of the disease process. As the cellulitis invades the deeper tissues, a peritonsillar abscess develops. Early management and recognition of a PTA is important before it evolves and invades surrounding structures. Complications of a PTA may include development of a parapharyngeal abscess, glottic edema, mediastinitis, pericardial effusion and tamponade, septicemia, airway obstruction, and post-streptococcal sequelae such as glomerulonephritis and rheumatic fever.

Currently, the treatment for PTA includes the initiation of broad-

spectrum antibiotics, administration of steroids, and either watchful waiting, needle aspiration, incision and drainage (I&D), or definitive surgical management. Over the past decade, the management of PTAs has been challenged and alternative management options have been researched and discussed. Treatment options range from needle aspiration in the acute phase, to I&D, followed by a surgical tonsillectomy. This article will focus on the most current literature available regarding the treatment of PTAs, and reviews the data surrounding the use of bedside ultrasound in their evaluation.

What Bugs Are We Treating?

Source: Sakae FA, Imamura R, Sennes LU, et al. Microbiology of peritonsillar abscesses. *Braz J Otorhinolaryngol* 2006;72:247-251.

DR. SAKAE AND COLLEAGUES prospectively studied 30 patients with PTA from June to November 2001. Patients ranged in age from 9 to 69, with the average being 24.2 years of age. Most were females (66.7%). All patients received aspiration followed by I&D. The aspirate from the largest area with more than 3 mL of pus was sent to the lab within 30 minutes via a sterile tube for analysis and culture. The aspirates were analyzed for the number of bacteria per aspirate and separated based on prior antibiotic use. Organisms were categorized into three major groups: *Streptococcus* species, other aerobes, and anaerobes.

Of the 30 aspirates, 26 had at least one organism, and most samples demonstrated a polymicrobial infection. A total of 69 organisms were found, with an average of 2.3 per aspirate. Patients with prior antibiotic exposure (19/30) had

VOLUME 4 • NUMBER 4 • APRIL 2009 • PAGES 25-32
AHC Media LLC Home Page—www.ahcmedia.com • CME for Physicians—www.cmeweb.com

Statement of Financial Disclosure: Executive Editor, Ann M. Dietrich, MD, FAAP, FACEP; Drs. Wu and Hird (authors); and Dr. Perkin (peer reviewer) reported no financial relationships with companies having ties to this field of study.

fewer bacteria in their aspirate. Four of these patients had negative cultures from the aspirate obtained. In seven aspirates, only aerobic bacteria were found, with *Streptococcus* dominating this group. One aspirate grew only anaerobic organisms (*Prevotella* and *Peptostreptococcus* species).

When the final speciation and

sensitivities were evaluated, the authors found that although prior antibiotic use did decrease the number of bacteria isolated, it did not lead to complete eradication of the infectious organisms found in the aspirate.

Commentary

Most studies thus far have shown that health care professionals are using penicillin-based antibiotics for first-line treatment of PTA. Clindamycin is being reserved for those that are allergic to penicillin. In this study, the aspirates showed polymicrobial infections, with most PTAs resulting from both aerobic and anaerobic growth. Practitioners should consider initiating broad-spectrum antibiotic coverage for both aerobic and anaerobic organisms until definitive therapy with an incision and drainage or aspiration can be completed. A large-scale, multicenter study is needed to evaluate the microorganism growth patterns in PTAs in our current patient population, and to help guide further antibiotic recommendations.

entation (192/606). The remaining two thirds of PTAs presented without prior consultation and were excluded from their analyses.

The control group consisted of those with just the diagnosis of a simple pharyngitis. Analysis amongst the two groups discovered that the case/PTA group contained more males, smokers, and/or those between 21 and 40 years of age. In this study, patients with PTA did not have more documented episodes of pharyngitis.

From their data, the authors concluded that most cases of PTA present without warning and present rather quickly. In their patient population, health care professionals did not have the opportunity to evaluate and consider antibiotics early on in the management of PTA cases. Only one third of their patients presented in the early stages of the disease process for early evaluation and treatment.

Commentary

Although it is common practice to minimize the risk of PTA development by treating patients with antibiotics when they present with pharyngitis, it is unclear if these are the patients that are highest-risk for PTA. Studies thus far have shown that the annual incidence of PTA development from a sore throat is low (15.8 per 1,000 patients). Prescribing antibiotics to every patient that presents with pharyngitis is seen by many as a potential waste in resources, and can lead to antibiotic resistance over time. Future studies should evaluate the cost-benefit analysis of early antibiotic use versus obtaining a pharyngeal culture followed by a 48–72 hour follow-up and monitoring for PTA development. From this study, the highest incidence of PTAs were found in males, smokers, and those between the ages of 21 and 40 years. Fur-

Subscriber Information

Customer Service: 1-800-688-2421.
Customer Service E-Mail: customerservice@ahcmedia.com
World-Wide Web: www.ahcmedia.com

Subscription Prices

United States

\$299 per year. Add \$17.95 for shipping & handling
(Student/Resident rate: \$144.50).

Multiple Copies

Discounts are available for group subscriptions, multiple copies, site-licenses or electronic distribution. For pricing information, call Tria Kreutzer at 404-262-5482.

Outside the United States

\$329 per year plus GST (Student/Resident rate: \$159.50 plus GST).

Practical Summaries in Acute Care, ISSN 1930-1103, is published monthly by AHC Media LLC, 3525 Piedmont Rd., NE, Bldg. 6, Suite 400, Atlanta, GA 30305.

ASSOCIATE PUBLISHER: Coles McKagen

MANAGING EDITOR: Allison Weaver

DIRECTOR OF MARKETING: Schandale Komegay

GST Registration Number: R128870672

Periodicals Postage Paid at Atlanta, GA 30304 and at additional mailing offices.

POSTMASTER: Send address changes to *Practical Summaries in Acute Care*, P.O. Box 740059, Atlanta, GA 30374.

Copyright © 2009 by AHC Media LLC. All rights reserved. No part of this newsletter may be reproduced in any form or incorporated into any information-retrieval system without the written permission of the copyright owner.

Back Issues: \$50 per issue. Missing issues will be fulfilled by Customer Service free of charge when contacted within one month of the missing issue's date.

This is an educational publication designed to present scientific information and opinion to health professionals, to stimulate thought, and further investigation. It does not provide advice regarding medical diagnosis or treatment for any individual case. Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. Professional counsel should be sought for specific situations. The publication is not intended for use by the layman.

Accreditation

AHC Media LLC is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

AHC Media LLC designates this educational activity for a maximum of 20 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Approved by the American College of Emergency Physicians for 20 hours of ACEP Category 1 credit.

Practical Summaries in Acute Care has been reviewed and is acceptable for up to 12 Prescribed credits by the American Academy of Family Physicians. AAFP accreditation begins 06/01/08. Term of approval is for one year(s) from this date. (This/Each) (element, volume, issue, monograph, tape, web cast, etc) is approved for 1 Prescribed credits. Credit may be claimed for one year(s) from the date of (this/each) (issue, webcast, etc).

This CME activity is intended for emergency, urgent care, and family practice physicians. It is in effect for 24 months from the date of the publication.

Questions & Comments

Please email Allison Weaver, Managing Editor,
allison.weaver@ahcmedia.com, or call (617) 629-5951.



ther analysis of the authors' data would be useful to delineate what were the common factors amongst the 414 other PTA cases that did not present with a sore throat within 30 days of their PTA presentation.

Can Antibiotics Alone Successfully Treat Uncomplicated PTAs?

Source: Lamkin RH, Portt J. An outpatient medical treatment protocol for peritonsillar abscess. *Ear Nose Throat J* 2006;85:658.

BETWEEN 2002 AND 2005, DR. Lamkin and colleagues treated 98 PTA patients with an outpatient medical regimen of hydration, antibiotics, steroids, and adequate pain control. Hydration included 1–2 liters of intravenous (IV) fluids at presentation, then 2L of oral hydration per day at home. Antibiotics consisted of 2g of IV cefazolin at presentation and then 500mg of cephalexin four times a day for 10 days. For those patients who had a penicillin allergy, clindamycin was used as an alternative. Steroids consisted of dexamethasone and methylprednisolone at presentation, and then 10 days of prednisone. Pain control was achieved by ketorolac and narcotics at presentation, followed by oral narcotics at home.

All of the patients included in this study were of Native American descent, and were ages 9–48 years. Diagnosis of a PTA was based on clinical presentation and physical exam findings alone. The medical regimen was deemed to be successful if the patient was asymptomatic after 10 days of treatment.

Only four patients required drainage; two underwent needle aspiration and two underwent a I&D. Of the remaining 94 patients, six required admission for observa-

tion and IV antibiotics. None of the patients required transfer to a higher level of care. From the authors' experience, their medical treatment protocol provides a great alternative for a community hospital to treat PTA without having to transfer all cases, with good results through the use of steroids, hydration, antibiotics, and pain control.

Commentary

The outpatient management approach described by Dr. Lamkin and colleagues is a good alternative for smaller community-based hospitals where subspecialists such as ear, nose, and throat surgeons are not readily available for immediate consultation and invasive management in the acute phase. It is also a consideration for certain patients wanting to try to avoid drainage with good follow-up and return instructions. From a cost-benefit standpoint, this method is more cost-effective, with fewer hospitalizations and procedure charges. This appears to be a model for the otherwise healthy adolescent patient in whom it might already be difficult to perform an aspiration or incision and drainage. Good, close follow-up in a young patient population with no co-morbidities was the key to this study. Although reassuring, the results of this study will need to be validated in a large, multi-center fashion with case controls and generalizability analysis.

Can Aspiration and Antibiotics Treat Uncomplicated PTAs Successfully?

Source: Al-Yaghchi C, Cruise A, Kapoor K, et al. Outpatient management of patients with peritonsillar abscess. *Clin Otolaryngol* 2008;33:32-55.

DR. AL-YAGHCHI AND COLLEAGUES prospectively enrolled 46 patients during an 11-month study period in an attempt to set up an evidence-based outpatient protocol. Current evidence from published literature at the time of this article's publication was used to determine the treatment protocol utilized. Patients were enrolled in the study if aspiration from any of the three standard zones revealed pus. Exclusion criteria included diabetes or immunosuppressive disease, use of immunosuppressive medications, or evidence of airway compromise.

Antibiotic regimens were chosen based on discussions with the microbiologists and otolaryngologists on staff at their facility. In this study, patients were given amoxicillin-clavulanic acid or clindamycin if they were allergic to penicillin. All patients were also given a single dose of dexamethasone.

In this study, only four patients required hospitalization, with two requiring re-aspiration for abscess re-accumulation. Only one patient required a surgical tonsillectomy secondary to failure of re-aspiration.

Dr. Al-Yaghchi and colleagues also performed telephone follow-up evaluations of the enrolled patients to determine patient satisfaction, time to eating, and time to return to normal activities. Their results showed that the median time to eating was 12 hours and the time to return of normal activities was two days. Patient satisfaction with their management and discharge was 93%. The only ones with unsatisfactory comments were the three patients who were admitted after failure of outpatient management.

Commentary

The results of this study demonstrated that healthy patients with

PTAs can be successfully treated on an outpatient basis based on this outpatient protocol if no evidence of airway compromise is present. Patient satisfaction scores were good, but approximately 8% of the patients evaluated required subsequent admission and further management. This study did not evaluate I&D as a possible management tool in their algorithm. It would have been interesting to see how patients would do with an I&D of an abscess that failed simple aspiration, before surgical intervention was performed. It would also have been helpful to know what factors distinguished the patients in whom treatment failed from those that were managed successfully via their algorithm.

Because this study excluded patients who are immunocompromised, the protocol described by Dr. Al-Yaghchi and colleagues can only be generalized to include young, healthy patients who meet their study criteria. The average age of the participants included in the study was 30 years (range 17–59 years of age) so it is unclear how successful this algorithm will be with an older patient population. When utilized on the appropriate patient population, it appears that successful results can be achieved with a simple needle aspiration, followed by a single dose of oral steroids, and an outpatient antibiotic regimen with close follow-up.

Recurrence Rates: Needle Aspiration vs. Incision and Drainage

Source: Wolf M, Even-Chen I, Kronenberg J. Peritonsillar abscess: Repeated needle aspiration versus incision and drainage. *Ann Otol Rhinol Laryngol* 1994;103:554-557.

DR. WOLF AND COLLEAGUES RETROSPECTIVELY reviewed medical records of all 160 patients with a PTA seen between January 1988 and July 1992. During the first two years of the review, only I&D was performed, followed by daily dilations at the site of the incision. Since the early 1990s, needle aspiration has typically been the treatment of choice for suspected PTAs. Repeated aspirations were performed until the aspirate did not yield any purulent drainage. Often times, multiple aspirations were required.

During this retrospective review, the research team recorded the number of aspirations performed and the amount drained each time. I&D was only performed if symptoms did not resolve with repeat aspirations. Recurrences were divided into a late category and early recurrence (within one month). A telephone questionnaire was added to include the patient's perspective and recollection of the events.

Of the 160 patients evaluated, 86 required repeated needle aspirations, while 74 underwent I&D. In the repeat needle aspiration group, 24 underwent a single aspiration, 38 underwent two aspirations, 19 underwent three attempts, and five had four aspirations before the abscess finally resolved. Only eight patients required I&D in the group of repeat aspirations. Of the patients that required repeat aspirations, 20 were noted to have a recurrent PTA. Conversely, only three of the I&Ds were noted to have recurrence. Tonsillectomy was eventually sought out in 23 patients—15 in the aspiration group and eight in the I&D group. The authors noted that all results were statistically significant.

The study suggests that although needle aspiration is a tempting treatment option for outpatient management of a PTA, there is a higher risk

for abscess recurrence and residual infection when compared to I&D.

Commentary

Although this was a retrospective study, the data from this article helps to address a few of the more controversial questions surrounding the management of PTAs. Based on the data they collected, it appears that there is a >50% chance that a patient will need a repeat aspiration or subsequent I&D if needle aspiration is chosen as the initial management plan. If patients cannot tolerate a full I&D in the outpatient setting (secondary to trismus, pain, etc.) or if the practitioner does not feel comfortable performing a full I&D in the outpatient setting, patients will need to be informed of their risk for recurrence and further treatment. If a full I&D cannot be performed in the acute phase, patients must be given very specific and timely follow-up instructions to minimize complications.

In their review, the authors also noted that although 34 of 160 patients (21.25%) had a history of recurrent tonsillitis prior to abscess formation, they were not the majority of the group that returned with recurrent abscesses. Contrary to popular belief that patients with a history of PTA should undergo more definitive treatment in the acute phase (i.e., I & D or surgical intervention), the data from this review suggest that prior abscesses do not serve as an independent predictor of recurrence, and that all patients should be evaluated for an I&D as the first line of treatment in the acute phase.

This article helps answer the question of the utility of repeat aspirations versus I&D. Their data show that initial aspiration is effective but leads to higher rate of recurrence than initial I&D. Based on this article, we can inform

patients that when we perform an aspiration there is a chance of recurrence, and that follow-up is mandatory if symptoms do not resolve completely.

Does Steroid Use Improve the Clinical Outcome of PTA?

Source: Ozbek C, Aygenç E, Tuna EU, et al. Use of steroids in the treatment of peritonsillar abscess. *J Laryngol Otol* 2004;118:439-442.

DR. OZBEK AND COLLEAGUES prospectively followed 62 patients to determine the effectiveness of improving clinical outcomes with steroids in peritonsillar abscess patients. Patients were randomly divided into two groups. One group of 28 patients received antibiotics and one dose of a placebo; the other group of 34 patients received a dose of antibiotics and a dose of 2–3 mg/kg of methylprednisolone, up to maximum dose of 250 mg. Both the patient and observer were blinded to which group they were in. All patients were hospitalized to follow their course and were observed for fever, pain upon mouth opening, trismus, and time hospitalized. Pediatric patients younger than 16 years of age were excluded in this study.

The following intervals were assessed: time to discharge, time to fever resolution, time to tolerating water without pain, and time to improvement of trismus. Patients randomized to the group receiving steroids showed significant improvement in all of the aforementioned times.

Commentary

This study demonstrates that a single steroid dose can lead to significant improvement in recovery if

given in the initial treatment of a PTA. Its anti-inflammatory and anti-pyretic properties help improve the signs and symptoms of PTA quickly and decrease the recovery time. Future studies will need to be conducted to compare and contrast the efficacy of administering steroids via the IV versus oral routes, and also, to address whether or not an outpatient steroid regimen should be continued following the initial oral or IV dose.

Does the Type of PTA on CT Influence the Success of Aspiration?

Source: Monobe H, Suzuki S, Nakashima M, et al. Peritonsillar abscess with parapharyngeal and retropharyngeal involvement: Incidence and intraoral approach. *Acta Otolaryngol Suppl* 2007; 559:91-94.

DR. MONOBE AND COLLEAGUES retrospectively reviewed 45 charts of patients with PTAs that had involvement of the parapharyngeal and/or retropharyngeal spaces from 2001 to 2006. A computed tomography (CT) scan was ordered on all patients to determine the extent of the abscess. Patients were excluded if the abscess extended into the lateral parapharyngeal space by clinical exam or CT results. All patients were initially started on IV antibiotics. The authors then used the CT results to divide the patients into two groups: superior PTA vs. inferior PTA.

The superior group contained 21 patients. Of these patients, 90% could be successfully drained by aspiration or I&D. The inferior group contained 24 patients. Only 58% of these patients underwent aspiration or I&D, with the other 42% receiving antibiotics and IV fluids secondary to the location of

the abscess near the hypopharynx. In the inferior group, 21% were noted to have co-existent epiglottitis involvement, with 8% of these patients requiring tracheotomy during the management of their epiglottitis.

Commentary

There are few studies to date that have evaluated the use of CT scans to help with the management algorithm for PTAs. Most acute care practitioners have primarily used their clinical exam findings and avoided CT scans secondary to the cost, risk of radiation and IV contrast injection, time required to obtain the study, and available resources. In this study, the authors actually discovered that the results of CT scans could be helpful in delineating the type of treatment that may be required, and differentiating those that may require closer monitoring and invasive management (i.e., tracheostomy). Of note, the results of this study showed that patients with an inferior PTA are at risk for caudal extension and epiglottitis involvement. Future studies should be directed at defining where the anatomical cut-off should be in distinguishing a superior PTA versus an inferior PTA so that this distinction can be made to help guide management in situations where a CT scan cannot be readily obtained.

Transcutaneous Ultrasound vs. Intraoral Ultrasound for the Diagnosis of PTA

Source: Buckley A, Moss EH, Blokmanis A. Diagnosis of peritonsillar abscess: Value of intraoral sonography. *AJR Am J Roentgenol* 1994;162: 961-964.

IN 1994, DR. BUCKLEY AND COLLEAGUES recruited three volunteers and 18 patients with suspected PTA and performed both transcutaneous and intraoral sonography (IOS) to aid in the diagnosis and management. In two of the 21 patients, adequate IOS could not be completed secondary to trismus and an inability to suppress the natural gag reflex.

Of the 19 transcutaneous and intraoral scans that were successfully performed, IOS showed a PTA in 10 of the patients. Of these 10 confirmed cases, nine had purulent material drained in the operating room. The patient that did not undergo surgical confirmation only demonstrated an 8mm abscess pocket on IOS, so conservative management was initiated in lieu of surgical drainage.

On transcutaneous ultrasound, seven of 21 patients were deemed to have normal scans. Of these seven, subsequent IOS showed a PTA in four of them and peritonsillar cellulitis in two cases.

The authors concluded that IOS is better than transcutaneous ultrasound in the detection of PTA and should be utilized routinely when the clinical exam is equivocal or questionable.

Commentary

Bedside IOS is a well-tolerated, noninvasive, and quick technique that can be employed to aid in the evaluation and diagnosis of suspected PTAs. Although practitioners can typically visualize many of the oropharyngeal structures via the transcutaneous approach, the risk of a false-negative scan is too high to rely on this modality alone to exclude the presence of a PTA. In patients in whom the intraoral technique cannot be easily tolerated, the use of adequate topical medication and allowing the patient to perform their own intraoral scan can help

maximize the quality of the images obtained and minimize patient discomfort.

Ultrasound in the Diagnosis and Treatment of PTA

Source: Blaivas M, Theodoro D, Duggal S. Ultrasound-guided drainage of peritonsillar abscess by emergency physician. *Am J Emerg Med* 2003;21:155-158.

DR. BLAIVAS AND COLLEAGUES provide a case series of six patients demonstrating that emergency physicians can perform a bedside intraoral ultrasound to evaluate PTAs with 100% sensitivity and specificity. Patients were given a topical anesthetic and/or ketorolac to minimize patient discomfort and to help blunt the gag reflex during intraoral scanning. Patient 1 had a PTA visualized on IOS that was drained by an otolaryngologist after several blind needle drainage attempts. Patients 2, 3, and 6 had scans that were negative for PTAs and had multiple needle aspirations that confirmed the diagnosis of peritonsillar cellulitis alone. Patient 4 had a documented PTA on IOS that could not be localized using blind needle aspiration alone. With ultrasound guidance, 10mL of purulent material was successfully drained. Patient 5 was suspected of having just a peritonsillar cellulitis on exam. IOS and needle aspiration demonstrated that the patient had an occult PTA that required more definitive treatment.

Commentary

Clinical impression alone is often unreliable in the evaluation and diagnosis of a suspected PTA, and a blind needle aspiration can lead to false-negative results in

10–12% of cases. Imaging the suspected area with CT is not only time-intensive and expensive, but it also exposes patients to unnecessary radiation risks. In his case series, Dr. Blaivas shows that bedside ultrasound can be used by emergency physicians to not only diagnose the presence of PTAs, but also help localize the abscesses for successful drainage. With the popularity and availability of bedside ultrasound on the rise, this could be a very valuable adjunct used in the diagnosis of management of suspected PTAs.

Conclusion

With an annual incidence of >50,000 cases, acute care practitioners need to remain up to date on the latest diagnostic and treatment options for PTAs. For many years, the practice patterns and management options for PTAs remained stagnant. Recent advances in technology and a push towards more aggressive management has prompted a rise in the amount of research data now available.

According to the most recent studies, outpatient treatment is not only successful but also cost-effective in the management of PTAs. Furthermore, higher patient satisfaction scores have been associated with these outpatient treatment options. From the recent studies, it is clear that bedside aspiration, oral antibiotics, adequate hydration, steroids, and pain control can be a viable option for many patients seen in the acute setting. The caveat is that patients managed in this manner need to have close follow-up available for the rare instances where recurrence and complications may occur. In some instances, bedside aspiration will not be enough, and patients will need to have more definitive treatment with

future I&D or surgical management. There are also instances where aspiration is not a viable option, such as in an uncooperative patient, uncertain diagnosis, very young child, or when airway problems are present. Furthermore, practitioners will need to consider extending their antibiotic coverage from the initial antibiotic choice of penicillin to clindamycin to include both anaerobic and aerobic organisms if the abscess does not improve. With *Streptococcus* species remaining one of the most prevalent bacteria in recent aspirates, penicillin remains an option for initial treatment of a first-time, uncomplicated abscess.

If patients present with physical exam findings and diagnostic imaging results that do not suggest PTA formation yet, antibiotics may be considered only if the practitioner suspects a bacterial source for the pharyngitis. Antibiotics have not been shown to decrease the incidence of PTA occurrence and carry significant side effects and risk for resistance. It is also important to remember that steroids are an important adjunct to the treatment of PTA, not only improving patient symptoms but also decreasing the time to resolution of the abscess.

With the increased use of diagnostic imaging in the evaluation for potential PTAs, studies have started to evaluate the utility of CT scans and bedside ultrasound. Although a CT scan can be useful in delineating the presence and extent of a PTA, its use is not entirely time- or cost-effective. Furthermore, practitioners must take into account the associated risks of IV contrast and radiation exposure. The introduction of bedside ultrasound in the management of PTAs provides acute care practitioners with a useful and quick diagnostic adjunct. Although the intraoral approach provides the most sensitive

and specific results, the transoral approach can still be utilized to provide useful data in patients who cannot tolerate an intraoral evaluation.

With more large-scale, double-blinded, randomized, case-controlled

studies underway, more data and guidelines will be forthcoming in regard to the management of a common ailment that can lead to serious consequences if not managed appropriately in the acute phase.

CME OBJECTIVES

Upon completing this program, participants will be able to:

- Summarize the most recent significant studies in emergency medicine/urgent care related to a single topic;
- Discuss up-to-date information about new drugs, techniques, equipment, trials, studies, books, teaching aids, and other information pertinent to the stated topic;
- Evaluate the credibility of published data and recommendations about the stated topic.

CME INSTRUCTIONS

Physicians participate in this continuing medical education program by reading the articles, using the provided references for further research, and studying the CME questions. Participants should select what they believe to be the correct answers, then refer to the list of correct answers to test their knowledge. To clarify confusion surrounding any questions answered incorrectly, please consult the source material.

After completing this activity, participants must complete the evaluation form provided at the end of each semester (May and November) and return it in the reply envelope provided to receive a credit letter. When an evaluation form is received, a credit letter will be mailed to the participant.

To reproduce any part of this newsletter for promotional purposes, please contact:

Stephen Vance

Phone: (800) 688-2421, ext. 5511

Fax: (800) 284-3291

Email: stephen.vance@ahcmedia.com

To obtain information and pricing on group discounts, multiple copies, site-licenses, or electronic distribution please contact:

Tria Kreutzer

Phone: (800) 688-2421, ext. 5482

Fax: (800) 284-3291

Email: tria.kreutzer@ahcmedia.com

Address: AHC Media LLC
3525 Piedmont Road, Bldg. 6, Ste. 400, Atlanta, GA 30305 USA

To reproduce any part of AHC newsletters for educational purposes, please contact:

The Copyright Clearance Center for permission

Email: info@copyright.com

Website: www.copyright.com

Phone: (978) 750-8400

Fax: (978) 646-8600

Address: Copyright Clearance Center
222 Rosewood Drive, Danvers, MA 01923 USA

16. According to recent literature, what is the most common type of organism(s) grown from PTA aspirates?

- A. Aerobic organisms only
- B. Anaerobic organisms only
- C. Both anaerobic and aerobic organisms
- D. No growth

17. Which of the following are potential complications of PTAs not managed appropriately in the acute phase?

- A. Mediastinitis
- B. Pericarditis
- C. Bacteremia
- D. Epiglottitis
- E. All of the above

18. According to recent literature, what are some of the most important components of PTA management in the acute phase?

- A. Antibiotics
- B. Hydration
- C. Pain control
- D. Steroids
- E. All of the above

19. What is the rate of pharyngitis developing into a PTA?

- A. 1%–10%
- B. 10%–20%
- C. 20%–30%
- D. 30%–40%
- E. 40%–50%

20. According to Blaivas et al, what is the reported sensitivity and specificity of a bedside intraoral ultrasound for diagnosing a PTA when performed by emergency physicians?

- A. Sensitivity 75%, specificity 25%
- B. Sensitivity 60%, specificity 40%
- C. Sensitivity 90%, specificity 85%
- D. Sensitivity 100%, specificity 100%
- E. Sensitivity 60%, specificity 45%

Answers: 16. C, 17. E, 18. E, 19. A, 20. D

Executive Editor

Ann M. Dietrich, MD, FAAP, FACEP

Professor of Pediatrics, Ohio State University; Attending Physician, Columbus Children's Hospital; Associate Pediatric Medical Director, MedFlight, Columbus, Ohio

Michael L. Coates, MD, MS

Professor and Chair, Family and Community Medicine, Wake Forest University School of Medicine, Winston-Salem, North Carolina

Moirá Davenport, MD

Attending Physician
Allegheny General Hospital
Departments of Emergency Medicine and Orthopaedic Surgery
Pittsburgh, PA

Robert Falcone, MD

President, Grant Medical Center; Columbus, Ohio; Clinical Professor of Surgery, Ohio State University, Columbus, Ohio

Jonathan D. Lawrence, MD, JD, FACEP

Emergency Physician, St. Mary Medical Center, Long Beach, California; Assistant Professor of Medicine, Department of Emergency Medicine, Harbor/UCLA Medical Center, Torrance, California

Eric L. Legome, MD, FACEP

Program Director, NYU/Bellevue Emergency Medicine Residency; Assistant Professor, New York University School of Medicine, New York

Grant S. Lipman, MD

Clinical Assistant Professor of Surgery, Associate Director, Wilderness Medicine Fellowship, Division of Emergency Medicine, Stanford University School of Medicine

Sharon Mace, MD, FACEP, FAAP

Associate Professor, Ohio State University School of Medicine; Faculty, MetroHealth Medical Center/ Emergency Medicine Residency; Clinical Director, Observation Unit; Director, Pediatric Education/ Quality Improvement, Cleveland Clinic Foundation, Cleveland, Ohio

S.V. Mahadevan, MD, FACEP

Assistant Professor of Surgery, Associate Chief, Division of Emergency Medicine, Stanford University School of Medicine, Stanford, California

David E. Manthey, MD

Director, Undergraduate Medical Education, Associate Professor, Department of Emergency Medicine, Wake Forest University School of Medicine, Winston-Salem, North Carolina

Catherine Marco, MD, FACEP

Clinical Professor, Medical University of Ohio; Attending Physician, St. Vincent Mercy Medical Center, Toledo, Ohio

Amal Mattu, MD

Associate Professor and Program Director, Emergency Medicine Residency, University of Maryland School of Medicine, Baltimore, Maryland

Ronald Perkin, MD, MA

Professor and Chairman, Department of Pediatrics, The Brody School of Medicine, East Carolina University, Greenville, North Carolina

Andrew D. Perron, MD, FACEP, FACSM

Residency Program Director, Department of Emergency Medicine, Maine Medical Center, Portland, Maine

John Santamaria, MD

Affiliate Professor of Pediatrics, University of South Florida School of Medicine, Tampa, Florida