



PASIG MONTHLY CITATION BLAST: No.28

March 2008

Dear PASIG members:

To all of those we met at this year's CSM, hello and welcome. To those who spoke at our PASIG programming or presented your research as a platform or poster, thank you for your contribution. And a warm welcome to all *Orthopaedic Section* members. We're mailing you this Citation BLAST as an example of what benefits the PASIG offers to its members. ***If you'd like to continue receiving these BLASTs, check us out and join the PASIG - it's free.*** (To join, go to the Orthopaedic Section webpage: www.orthopt.org and you will find a membership application in the menu on the left).

The PASIG Research Committee initiated this monthly Citation BLAST on performing arts-related topics in June 2005. Each month we send a new list of performing arts (PA) citations to members of the PASIG to further the pursuit of PA-related scholarship. Each month's citations are added to specific EndNote libraries: 1) Ice Skating, 2) Gymnastics, 3) Music, and 4) Dance. The BLASTS and updated libraries are posted on the PASIG webpage for our members to access and download. (Information about EndNote referencing software can be found at <http://www.endnote.com>, including a 30-day free trial).

Previous special interest topics have included flexor hallucis longus disorders, focal dystonia, pathology of the hallux sesamoids, embouchure, popliteus dysfunction, and assessing and training core control. Our special interest topic this month is *Costochondritis*. The format is an annotated bibliography of articles on the selected topic from 1998 – 2008. If you'd like to suggest a topic or contribute a special interest BLAST, please let me know.

If you'd like to contribute in another way, the PASIG is looking for submissions for OPTP publication. This can be clinical pearls, case studies, treatment technique or other interesting topics on performing arts. The submission can be up to 3 pages. The next OPTP deadline is May 20th.

We welcome our newly elected PASIG board members, Leigh Roberts DPT, OCS as President, Amy Humphrey PT, MSPT as Treasurer, and Jason Grandeo PT as Nominating Committee member. Sheyi Ojofeitimi MPT becomes Nominating Committee Chair. A big thank you to Susan Clinton who steps off as President, Leigh Roberts who served as Treasurer, and Stephania Bell as Nominating Committee Chair! To all of our members – get active! We need your ideas! We need you! You form a strong network that is invaluable to the performing arts community. Personally, I treasure the many friendships that I have formed through the PASIG and the help and sharing that each colleague brings to that friendship.

As always, please drop me an e-mail anytime.

Regards,
Shaw

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COSTOCHONDRITIS

Recently two dancers in a company of 30 developed costochondritis. From never seeing this injury, it seemed like a virtual epidemic. They reported unilateral pain, exhibited swelling, and were tender to touch at the junction of ribs 5 and 6 and sternum. Their repertory required movements and postures of thoracic arching into extension with both arms thrown back or one arm extended behind them into a back hinge to the floor. While limitation of activity usually allows healing to occur, they were on a 5-month tour. Rest wasn't an option, nor was taping due to the costumes they wore. To ensure we weren't missing anything, we conducted a literature search on this topic.

Shaw Bronner PT, PhD, OCS
PASIG Research Chair

Aspegren D, Hyde T, et al. (2007). Conservative treatment of a female collegiate volleyball player with costochondritis. J Manipulative Physiol Ther **30**(4): 321-5.

OBJECTIVE: This study was conducted to discuss the conservative care used to treat a female collegiate volleyball player with acute costochondritis. **CLINICAL FEATURES:** A 21-year-old collegiate volleyball player had right anterior chest pain and midthoracic stiffness of 8 months duration. **INTERVENTION AND OUTCOME:** High-velocity, low-amplitude manipulation was performed to the associated hypokinetic costovertebral, costotransverse, and intervertebral zygapophyseal thoracic joints. Instrument-assisted soft tissue mobilization was performed by using the Graston technique. Pain levels improved on numeric pain scale, as did functional status identified on Dallas Pain Questionnaire and Functional Rating Index. **CONCLUSION:** This athlete seemed to respond positively to manipulation, soft tissue mobilization, and taping.

Disla E, Rhim HR, et al. (1994). Costochondritis. A prospective analysis in an emergency department setting. Arch Intern Med **154**(21): 2466-9.

BACKGROUND: Costochondritis (CC) is a common, but poorly understood condition among patients with chest wall pain. We have prospectively analyzed distinctive features of patients presenting to the emergency department with chest pain and CC. **METHODS:** Patients with a chief complaint of chest pain, not due to trauma, fever, or malignancy, were prospectively evaluated for the presence of CC and compared with another chest pain group without CC. **RESULTS:** Of 122 consecutive patients studied, 36 had CC (30%) and in 17 the pain induced reproduced the original one (15%). Women made up 69% of the patients with CC (vs 31% of control subjects) and Hispanics 47% (vs 24% of control subjects). Only three patients (8%) with CC met the American College of Rheumatology criteria for fibromyalgia, while none of the control subjects did. Widespread pain was more common in the CC group (42% vs 5%). The mean sedimentation rate in the CC group was 44 +/- 31 mm/h vs 41 +/- 31 mm/h in the control group. The acute myocardial infarction rate was 6% in the CC group vs 28% in the control group. Rheumatoid arthritis and osteoarthritis were diagnosed in three and two patients, respectively, of 32 patients with CC cases. One year later, 11 (55%) of 21 patients with CC were still suffering from chest pain, but only one third still had definite CC. **CONCLUSIONS:** Costochondritis is common among patients with chest pain in an emergency department setting, with a higher frequency among women and Hispanics. It is associated with fibromyalgia in only a minority of cases. Patients with CC appear to have a lower frequency of acute myocardial infarction. Spontaneous resolution is seen in most cases at 1 year.

Freeston J, Karim Z, et al. (2004). Can early diagnosis and management of costochondritis reduce acute chest pain admissions? J Rheumatol **31**(11): 2269-71.

OBJECTIVE: We identified patients presenting with chest pain diagnosed as costochondritis by a consultant rheumatologist. The time taken to diagnosis was determined and the influence of diagnosis on subsequent management was assessed. We then estimated any cost benefits that early diagnosis and treatment of costochondritis might confer. Finally, we evaluated our current experience of sulfasalazine as a treatment for recurrent costochondritis. **METHODS:** This was a retrospective observational study of 25 consecutive patients (17 female), mean age 50 years (range 26-75), with costochondritis who initially presented with acute chest pain. **RESULTS:** The mean time to diagnosis was 9.4 (0-57) months. The total number of chest pain admissions pre-review was 39 compared with 6 post-review ($p < 0.0001$). The number of minor investigations was 169 pre-review compared with 17 post-review ($p < 0.0001$), and major investigations 30 compared with 0 ($p < 0.01$). All 13 patients treated with corticosteroid injections reported symptomatic improvement, and 10 of the 11 whose symptoms recurred responded to sulfasalazine. **CONCLUSION:** Patients with costochondritis frequently present with acute chest pain, often resulting in multiple admissions and investigations. In this study admission and investigation rates were significantly reduced following rheumatological review. How much of this reduction is directly a result of rheumatological intervention is unclear, given the limitations of the study. The findings suggest early review may improve patient care and reduce expenditure; in recurrent cases of costochondritis, sulfasalazine may be of additional longterm benefit.

Gregory PL, Biswas AC, et al. (2002). Musculoskeletal problems of the chest wall in athletes. Sports Med **32**(4): 235-50.

Chest pain in the athlete has a wide differential diagnosis. Pain may originate from structures within the thorax, such as the heart, lungs or oesophagus. However, musculoskeletal causes of chest pain must be considered. The aim of this review is to help the clinician to diagnose chest wall pain in athletes by identifying the possible causes, as reported in the literature. Musculoskeletal problems of the chest wall can occur in the ribs, sternum, articulations or myofascial structures. The cause is usually evident in the case of direct trauma. Additionally, athletes' bodies may be subjected to sudden large indirect forces or overuse, and stress fractures of the ribs caused by sporting activity have been extensively reported. These have been associated with golf, rowing and baseball pitching in particular. Stress fractures of the sternum reported in wrestlers cause pain and tenderness

of the sternum, as expected. Diagnosis is by bone scan and limitation of activity usually allows healing to occur. The slipping rib syndrome causes intermittent costal margin pain related to posture or movement, and may be diagnosed by the 'hooking manoeuvre', which reproduces pain and sometimes a click. If reassurance and postural advice fail, good results are possible with resection of the mobile rib. The painful xiphoid syndrome is a rare condition that causes pain and tenderness of the xiphoid and is self-limiting. Costochondritis is a self-limiting condition of unknown aetiology that typically presents with pain around the second to fifth costochondral joints. It can be differentiated from Tietze's syndrome in which there is swelling and pain of the articulation. Both conditions eventually settle spontaneously although a corticosteroid injection may be useful in particularly troublesome cases. The intercostal muscles may be injured causing tenderness between the ribs. Other conditions that should be considered include epidemic myalgia, precordial catch syndrome and referred pain from the thoracic spine.

Ian Rabey M. (2008). Costochondritis: Are the symptoms and signs due to neurogenic inflammation. Two cases that responded to manual therapy directed towards posterior spinal structures. Man Ther **13**(1): 82-6.

Rumball JS, Lebrun CM, et al. (2005). Rowing injuries. Sports Med **35**(6): 537-55.

Participation in the sport of rowing has been steadily increasing in recent decades, yet few studies address the specific injuries incurred. This article reviews the most common injuries described in the literature, including musculoskeletal problems in the lower back, ribs, shoulder, wrist and knee. A review of basic rowing physiology and equipment is included, along with a description of the mechanics of the rowing stroke. This information is necessary in order to make an accurate diagnosis and treatment protocol for these injuries, which are mainly chronic in nature. The most frequently injured region is the low back, mainly due to excessive hyperflexion and twisting, and can include specific injuries such as spondylolysis, sacroiliac joint dysfunction and disc herniation. Rib stress fractures account for the most time lost from on-water training and competition. Although theories abound for the mechanism of injury, the exact aetiology of rib stress fractures remains unknown. Other injuries discussed within, which are specific to ribs, include costochondritis, costovertebral joint subluxation and intercostal muscle strains. Shoulder pain is quite common in rowers and can be the result of overuse, poor technique, or tension in the upper body. Injuries concerning the forearm and wrist are also common, and can include exertional compartment syndrome, lateral epicondylitis, deQuervain's and intersection syndrome, and tenosynovitis of the wrist extensors. In the lower body, the major injuries reported include generalised patellofemoral pain due to abnormal patellar tracking, and iliotibial band friction syndrome. Lastly, dermatological issues, such as blisters and abrasions, and miscellaneous issues, such as environmental concerns and the female athlete triad, are also included in this article. Pathophysiology, mechanism of injury, assessment and management strategies are outlined in the text for each injury, with special attention given to ways to correct biomechanical or equipment problems specific to rowing. By gaining an understanding of basic rowing biomechanics and training habits, the physician and/or healthcare provider will be better equipped to treat and prevent injuries in the rowing population.

Singh AM, and McGregor RS (2005). Differential diagnosis of chest symptoms in the athlete. Clin Rev Allergy Immunol **29**(2): 87-96.

Chest pain is a common complaint of athletes in all age groups. In athletes, chest pain is often attributed to "chest tightness," and treatment for bronchospasm is considered. However, the causes of the pain are wide and varied, and the pain is referable to the many organ systems that localize to the thorax. Therefore, when treatment with bronchodilators fails, it becomes important to consider other nonasthmatic causes of the pain. These causes can be organized by system and are explained in this article. Cardiac causes are the most feared and, fortunately, are very rare in the adolescent setting. With a thorough

knowledge of etiologies of chest pain, the physician can often make a diagnosis with only a history and a physical exam.
