Serratus Anterior Muscle Pain Syndrome: A Little Known Cause of Chest Pain

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Background

Serratus Anterior Muscle Pain Syndrome (SAMPS), one of the Myofascial Pain Syndromes, is a rare cause of anterior chest pain.

It consists of pain overlying the fifth to seventh ribs in the midaxilary line. Referred pain radiates towards the anterior chest wall, the medial aspect of the arm, and finally, towards the ring and little fingers of the ipsilateral side.

SAMPS, a diagnosis of exclusion, should not be confused with myocardial infarction, or any other life-threatening causes of chest pain.

The epidemiology of the disease remains unknown due to a paucity of information published on the subject.

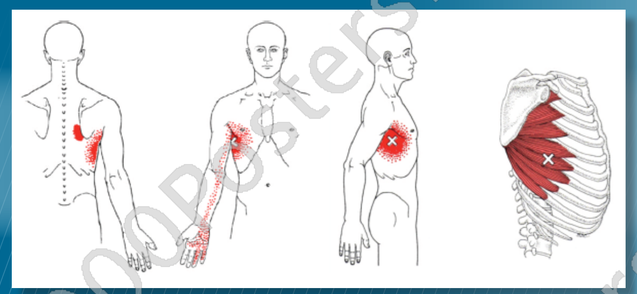
The Muscle

The serratus anterior originates from the lateral aspects of the first eight to nine ribs. The fibers from the upper four ribs attach to the scapula on it's superior angle, as well as to the costal surface of it's medial border. The fibers from the lower ribs attach to the inferior angle of the scapula on it's costal surface.

The serratus assists in scapular abduction, aiding the trapezius in scapular rotation, as well as acting as a scapular protractor, therefore keeping it's medial border against the thorax during movements of the upper limb.

The innervation of the serratus anterior is supplied by the long thoracic nerve of Bell which has its origins in the anterior rami of the C5 to C7, and sometimes, C8 spinal nerves. It travels inferiorly along the surface of the serratus.

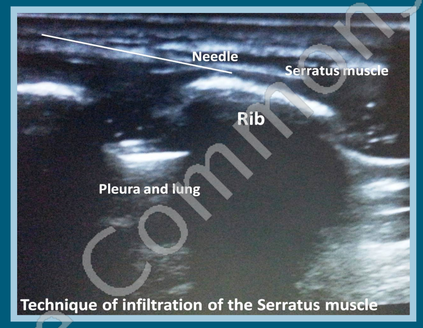
The nerve is especially vulnerable to injury during surgeries of the axillae, such as lymph node dissection during breast cancer surgeries. Damage to such nerve may result in winging of the scapula.



Methods

Three cases of SAMPS had come to our attention at the Montreal University Health Center Pain Clinic. A retrospective review of their records was performed with their consent.

Each patient had been referred to the clinic by a general practitioner or by a specialist. Prior to their examination at the clinic, each patient had been thoroughly investigated to rule out any non-musculoskeletal causes of chest pain by the referring physician. We also screened the patients for other potential diagnosis, and only once they had been ruled out did we proceed with our evaluation.



Technique of infiltration of the Serratus muscle

All three cases were managed by the same physician at the pain clinic. Upon their initial evaluation, a thorough examination of their neck, shoulder, upper back and chest wall was completed. The lateral insertions of the Serratus Anterior muscle were systematically palpated and reproduction of patient pain was sought.

When this proved positive, infiltration of the trigger points was performed with local anesthetics and steroids in order to confirm the diagnosis and treat the patients. Pain scores were recorded on a Verbal Analog Scale (VAS) at baseline and follow up.

Results

Three patients were subsequently diagnosed with SAMPS.

They were women between the ages of 50 and 74, and had developed the pain following a mastectomy. One of the patients complained of bilateral symptoms: pain on each side after an ipsilateral mastectomy.

The pain, described as a tightness, was constant for two of the women and considered intermittent in the third. The pain was referred to the ipsilateral arm and was exacerbated by exercise.

All three patients had received first line treatment through their primary care physicians, notably NSAIDs. They had also been treated with opioids, as well as neuropathic pain adjuvants, but to no avail.

Following the diagnostic infiltration, and upon follow up visit or via telephone interview one week later, all three women had reported a decrease in their pain by four to five points on the VAS.

Differential Diagnosis

Cardio-thoracic	Angina pectoris
	Myocardial infarction
	Pleurisy
	Lung cancer
Abdominal	Splenomegaly/Hepatomegaly
	Gallbladder Dysfunction
	Pancreatitis
Musculoskeletal	Intercostal Muscle Tear
	Fractured Rib Syndrome
	Cervical Radiculopathy
	Rib subluxation
Rheumatological	Osteoporosis
	Osteoarthritis
	Systemic Lupus Erythematous
	Ankylosing Spondylosis
	Polymyalgia Rheumatica
	Polymyositis
Infectious	Herpes Zoster
Other	Diabetic Neuropathy
	Nutritional Deficiency
	Metabolic Imbalance
	Fibromyalgia

Conclusions

SAMPS, a frequently forgotten cause of chest pain, should only be suspected once alternative diagnoses of chest-pain have been ruled out.

The clinician should suspect the syndrome in post-mastectomy patients having developed the specific pain. However, it is also our belief that other conditions may lead to the syndrome, such as post herpetic neuralgia, thoracic vertebral fractures and athletic shoulder injuries. Infiltration of the specific trigger points along the insertions of the Serratus Anterior muscle not only confirm the diagnosis, but also confer second line treatment for the patient. Further research on the subject would help identify other populations at risk, allowing for rapid recognition, and most importantly, initiation of treatment.

Serratus Anterior Muscle Pain Syndrome

Key points:	
Location	Pain along 5th to 7th ribs
	Midaxilary
Referred to	Anterior chest
	Medial aspect of arm
	Palmer aspect of ring and fifth fingers
Type	Deep, aching
	Constant or intermitent
Diagnosis	Passive stretching
Treatment	Fascial release techniques
	NSAIDs
	Trigger point injection

Must rule out non-musculoskeletal causes of chest pain

References

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