

Original Article

Acute Exposure Myositis of the upper trapezius

Rezina Banu¹, Priyajit Chattopadhyay², Rajeev Raman³, Arindam Basu⁴

Acute inflammation of the upper trapezius is a common seasonal condition observed during the change of seasons in some of the tropical countries. The condition appears to be an acute, non-infective exposure myositis of the trapezius muscle due to exposure to sudden cold air. The important causal factors are extreme variations in the day and night temperature by more than double and exposure of the shoulder area to cold air. A ten year study of 150 adult patients in the age group of 15 to 35 years is presented. The condition is more common in females and resolves within 2-3 days with anti-inflammatory drugs. The pathophysiology of acute exposure myositis appears to be a reflex vasoconstriction phenomenon occurring in the area of the upper trapezius. All patients responded well to the treatment and the pain completely disappeared within 2 to 3 days. The range of painless movement of the neck improved rapidly and was full by the 3rd day. Follow up was from six months to 1 year. In upper trapezius, the vasoconstriction occurs in the angiosome of the muscle which includes the skin over the shoulder, including the choke vessels, giving rise to exposure myositis. The condition is self-limiting and does not have long-term consequences.

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Key words : Trapezius, Myositis, Coldexposure, Angiosome.

Cold weather related problems in the limbs like frostbite and chilblains are well established entities. Wide (natural or manmade) variations in the day and night temperatures are found to be causing orthopaedic problems, though of a much lesser severity. When the minimum and maximum atmospheric temperatures vary by more than double during the change of season in the tropical weather, the day temperatures are on the warmer side, calling for use of artificial cooling indoors while the night temperatures are much colder. Acute pain in the area of upper trapezius is seen in young patients during this change of seasons. A ten-year study (from March 2000 to October 2010) is presented that includes analysis of 150 adult patients who had at least one episode of this condition during the change of season. The single most contributory factor was the exposure to cold air when the difference in the maximum and minimum temperatures was double the figures.

MATERIAL AND METHODS

One hundred and fifty patients in the age group of 15 to 35 years were studied for acute, weather related pain in the shoulder area that developed overnight. All the patients were otherwise healthy individuals with no previous

problem, either systemic or locally related to the shoulder and the cervical spine. The age group distribution is shown in Table 1.

The clinical presentation in all the cases was typically the same. The patient woke up with an acute pain and stiffness on one side of the neck, ipsilateral shoulder and interscapular area. There was a significant history of sudden exposure to cold air either in the form of riding a motorbike wearing an open collar outfit, sleeping or prolonged sitting directly in front of an air conditioner or a desert cooler outlet or even a high speed sealing fan with the shoulder area exposed, the day or night before. The right shoulder was more commonly affected than the left (R-97, L-53). No patient had bilateral involvement simultaneously. The most significant complaint was inability to turn the head to the affected side in looking backwards. There were no systemic signs of inflammation like fever. The affected area did not show any erythema or swelling. The neck was held in a position of tilt towards the affected side in the position of torticollis. There was acute tenderness on palpation of the upper trapezius upto the insertion in the acromion process. Passive turning of the neck to the affected side was painful. Other neck movements were minimally painful but not restricted. The ipsilateral shoulder was unaffected in its range of movements. There was no neurovascular deficit.

The diagnosis of this condition was made on the basis

¹RMO cum Clinical Tutor, Department of Obstetrics & Gynaecology. Murshidabad Medical College, Berhampore, Murshidabad 742101

²MS (Ortho), Associate Professor, Department of Orthopaedics, Diamond Harbour Medical College, Diamond Harbour 743331 and Corresponding Author

³MS (Ortho), Associate Professor, Department of Orthopaedics, North Bengal Medical College, Sushrutnagar, Darjeeling 734101

⁴MBBS, Senior Resident, Department of Orthopaedics, Malda Medical College, Malda 732101

Table 1 — Frequency distribution according to age and sex (n=150)

Age Group	Males (%)	Females (%)	Total (%)
15-25	32(21.33%)	36(24%)	68(45.33%)
25-35	34(22.67%)	48(32%)	82(54.67%)
TOTAL	66(44%)	84(56%)	150(100%)

of the typical history and clinical findings alone.

All patients were treated with oral analgesic (Ibuprofen 400 mgm tid or diclofenac sodium 50 mgm bid or nimesulide 100 mgm od) for 3 days, local heat in the form of hot packs or dry heat and protecting the part from exposure to cold by keeping the area covered with warm clothing.

RESULTS

All patients responded well to the treatment and the pain completely disappeared within 2 to 3 days. The range of painless movement of the neck improved rapidly and was full by the 3rd day. Follow up was from six months to 1 year. Eighty-seven patients (58%) showed a tendency for recurrent attacks at the change of season almost every year and this group was dominated by the male population, (40 out of 66 cases, 60 % of males) while only 20 out of 84 (17 %) females showed tendency for recurrent attacks. There were no local long-term effects of the condition.

DISCUSSION

Acute exposure myositis of the upper trapezius is an entity specifically related to the change of weather. It is observed specifically during the change of either summer to winter or winter to summer. The condition was seen occasionally during mid summer, when strong air conditioning was used at night and the day temperatures were as high as 40 degree Celsius. It was practically not seen during acute winter when the body was well covered with thick clothing or during the rainy season. The dominant extremity was commonly affected.

The pathology of acute exposure myositis appears to be a reflex vasoconstriction phenomenon occurring in the area of the upper trapezius. The skin overlying this large muscle gets cold due to exposure to cold wind leading vasoconstriction in the skin and the underlying muscle fibres, possibly along with minimal or no capillary wall damage. There appear to be two anatomical factors contributing to this phenomenon. Taylor and Palmer¹ described as an entity called 'choke vessels'. These are arteries or arterioles of sometimes constant but more often reduced calibre that span the boundaries of the adjacent territories of the main and the accessory blood vessels supplying a muscle. The upper part of trapezius is supplied by the superficial cervical artery. An additional supply to the lateral part of the muscle comes from the acromial branch of the suprascapular artery². The two arteries ramify in the muscle; Trapezius probably has 'choke vessels' between the territories of these two vessels. The other anatomical fact pertains to the concept of 'angiosomes'. These are composite blocks of tissues supplied by named distributing arteries and drained by their corresponding veins. Where a muscle underlies the integument, vessels bridge the two tissues. These may be primarily cutaneous vessels supplying the skin directly, contributing small branches to the muscle as they pass through it or they may be the terminal branches of intramuscular vessels, which perforate the muscle to supplement the blood supply

to the skin. The correspondence between the vascular territory in the skin and the underlying tissues has given rise to the concept of angiosomes. Correlating these two facts for upper trapezius, the vasoconstriction occurs in the angiosome of the muscle which includes the skin over the shoulder, including the choke vessels, giving rise to exposure myositis.

Cold injury to the mammalian tissues begins when the tissue temperature reaches 10°C³. At -5°C, cells lose the ability to recover from the cold induced damage. Factors affecting the phenomenon adversely are humidity and wind. Dessert coolers that use water circulation for cooling can increase the humidity, while other modes do not have the humidity factor. Wind accelerates the heat loss and disrupts the radiant heat around the body, leading to vasoconstriction and a low-grade vasculitis, which is quickly reversible. There is no damage to the capillary endothelium; hence no tissue oedema is observed. The injury is much less severe than even a first-degree frostbite; the damage is minimal and quickly reversible. The large size of the muscle (purely muscular in this area) and its predisposition for remaining exposed makes it vulnerable to exposure myositis⁴. Female predominance can be attributed to the collarless local outfit customs. The fact that the condition quickly subsides by application of warmth also points to it being caused by exposure to cold. It appears that the absolute size of the muscle also matters as seen in adolescents who are of larger frames than their peers. The youngest age of the patient in our study was 16 years. However, the predominantly unilateral affection is not understood clearly. The condition has been described as a cause of stiff neck along with other causes like degenerative cervical discs, infections of the cervical spine and neuritis of the nerves in the neck area without any clear description of the pathophysiology. The condition is self-limiting and does not have long-term consequences.

The condition is probably restricted to the geographical areas experiencing extremes of weather. There are no permanent or long-term consequences of this condition.

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