TITLE: ACUTE PAIN AND LOSS OF SHOULDER MOVEMENT - HOW TO GO ABOUT? AN EVIDENCED ANALYSIS

ABSTRACT:

Acute pain in shoulder, loss of active shoulder movement, in a diabetic, hyperlipidemia, endomorph subject gives risk to a variety of clinical conditions as under lying cause to be identified and treated with medication. As many associated conditions such as vertebrobasilar insufficiency, atherosclerosis, cervical myelopathy could be contra indications to many physiotherapy modalities such as traction and manual therapy procedures.

48 year old diabetic women, post hysterectomy, hyper lipedemia suddenly complaining of acute pain with total loss of ability to use right shoulder limiting her daily activities and her quality of life, were discussed. This study with due scientific evidence on importance of multidisciplinary care, using analytical assessment, arriving at proper diagnosis and treatment followed by specific physiotherapy were highlighted.

As orthopaedic and neurologic advice on investigations, evaluation with due medication, physiotherapeutic rehabilitation were carried with reasonable recovery in couple of months period later. The results were discussed on Numerical pain rating scale and her subjective shoulder function scores. Due clinical decision making skills, early intervention by other health care experts enable proper, timely health care delivery with team work was the core of this research

KEY WORDS:

NPRS – Numerical pain rating scale, NMRI – Nuclear magnetic resonance imaging,

HbA1C – Glycosylated Hemoglobin, LBA – Low back ache, DASH – The disabilities of Arm, Shoulder and Hand questionnaire.

INTRODUCTION:

Shoulder pain remains third cause of Musculoskeletal disorders next to back and knee, commonly reported in clinical practice. Shoulder pain could be due to various causes like diabetes mellitus, Thyroid, Acromio clavicular joint degeneration, Rotator cuff lesion, Adhesive capsulitis, Bursitis, Tenosynovitis, Psychological depression, Part of systemic illness, Traumatic origin, Non – traumatic reasons related which may include Tuberculosis, Lung or breast cancer. Further acute shoulder pain could be related to occupation, genetic susceptibility, Drug induced, Ischemic heart diseases, Psoriasis, Referred pain could emerge from visceral sources as supported by Leach et al 2013.

Physical movements which are painless forms, basic for an independant living. Whenever there is pain and loss of movement especially on dominant shoulder could limit daily activities including self-care. As a middle aged female home maker and employed further triggers the involved subject agony. As variety of Orthopaedic and neurological causes can influence on sudden loss of shoulder (Right) movements with acute pain affected subject was referred by physiotherapist to an orthopaedic surgeon, diabetologist and neurologist through a physician to further investigate the course, treat and refer back to physio rehabilitation.

The orthopaedic surgeon has diagnosed her as having cervical radioculopathy, with Nuclear magnetic resonance imaging (NMRI) showing multiple degenerative changes with neural compression of cervical spine.

Whereas acute pain with loss of voluntary movement clinician should consider causes such as stroke resulting from cerebral ischemia, complete tear of rotator cuff, supraspinatus tendon rupture, painful arc syndrome, cervical myelopathy as supported by systematic review by Dinnes et al 2003.

Further obtaining details on past medical history including cancer, trauma, unexplained weight loss, Vertigo, Motor or sensory deficit related to neurological lesion to be obtained to rule out red flags as these may restrict many physiotherapy modalities to be used. Physical examination on a subject with painful shoulder should include range of motion of cervical spine and shoulder, palpate for swelling, tenderness over axilla, cervical spine in and around shoulder joint, Assessment of power, stability, muscle wasting and deformity were to be done. These were in concurrence with Mitchell et al 2005 on assessment and evaluation of acute painful shoulder to rule out red flags for physiotherapy but refer to other medical experts.

AIMS AND OBJECTIVES:

I. To analyse various causes related to acute shoulder pain and loss of movement.

II. What are the ways to develop physiotherapist as independant as health care expert in a clinical scenario

NEED AND SCOPE OF THIS RESEARCH:

Mechanical means of treating a subject with symptomatic therapy for acute pain and weakness of shoulder using electrotherapy modalities and exercises which were commonly practiced. Further physical evaluation, Investigation, differential diagnosis and Medical treatment should be judiciously used with scientific evidence as underlying causes like osteoporosis, Vertebrobasilar insufficiency, Cervical myelopathy, Rotator Cuff tear, Acute inflammation may form red flags to manual therapy, cervical traction. Also other systemic causes like Diabetes, Referred visceral pain, cancer related issues, Rheumatoid arthritis, degenerative changes of shoulder, stroke, needs further investigations, medical, surgical intervention as relevant experts decide.

Hence highlighting an adult diabetic female with acute painful shoulder and loss of active shoulder movements were discussed.

In this research to enrich clinical therapist to implement learnt evidences for professional betterment and quality of physiotherapy practice; this research gets more significant.

MATERIALS & METHODOLOGY:

48 year old women, mesomorph, mother of 2 children gives past medical history of hysterectomy at the age of 36 years, employed as a clerical staff in a Non -Governmental organization (NGO) in Chennai. Normotensive, diabetic, hyperlipidemia C/O Pain over right shoulder with inability to lift shoulder for 2 days origin as on 12/09/2020.

The subject was later treated with strengthening griddle and shoulder joint muscles for a period of 2 months with thrice a week frequency, following referring to a physician, Orthopaedic surgeon, diabetologist and a neurophysician.

ON EXAMINATION

1. Obliterated cervical lordosis, 2. Hypertonicity of right upper extremity , 3.Babinski sign negative, 4. Motor power of shoulder muscles – Nil, 5.Radicular symptoms, 6.Trapezitis – positive, 7.BP - 140/96 mm/hg, 8.HR-90/min,9. Ambulant unaided, partially independent for sell care, 10.Pain over shoulder with no Il/o fall or any

infection, 11.Elbow, hand grip of (Right), left upper extremity, both lower extremities

NAD

Passive ROM of right shoulder, full but painful chief problem

1. Pain and inability to use right shoulder for self-care

2. Pain over cervical spine

PROBABLE DIFFERENTIAL DIAGNOSIS:

Cervical myelopathy? - Brachial plexus lesion? - Monoplegia? - Chronic cervical spondylosis with severe nerve root compression/ stenosis? - The orthopaedic surgeon has diagnosed her as having cervical radioculopathy, with NMRI showing her C3-C4

C4, C5, C5-C6 post central disc protrusion - Narrowing of spinal canal right > left - Serum cholesterol levels very high - Hba1c Blood sugar level – 8.

She was adviced a course of NSAID, tablet Gabapentin, continue neck arm sling for 15 days was referred to diabetologist.

RESULTS:

Her prognosis NPRS has decreased from 8/10 to 2/10. Shoulder functional index (Disabilities of the Arm, Shoulder and Hand Questionnaire) has improved from 80 to 38. The author being first contact health care expert, to whom the s on basic clinical evaluation expert, to whom the subject has reported

1. Has a suspicion on Monoparesis as there was a hypertonicity, as the subjects was a diabetic and having hyperlipidemia.
2. Passive movements shoulder range of movements were pain free, which further triggers the doubts on cervical myelopathy as reflexes were also exaggerated +++.
3. As the subject had trapezitis being employed as a clerk could further deepened the cause to cervicogenic neurological compression or a brachial plexus injury or stenosis in cervical spine.
4. Since no history of trauma fractures of cervical spine were ruled out
5. The subject was ambulant and converse relevantly, hence cognitively preserved so as a movement specialist, physio therapist when we come across these unique clinical situations, with due clinical reasoning at once refer the affected subject for further with due clinical, radiological and laboratory.

DISCUSSION:

Research Question arises:

I. Discuss the role of physiotherapist in this critical scenario

Symptoms of visceral reflective disorder should be ruled out from a mechanical mechanism of pain and ruling out for cervical radioculopathy (Mamula et al 2005). Occupation and imaging studies helps to establish the diagnosed. Murphy and Hurwitz et al 2007 where sequential steps to establish the origin of symptoms can be used where questions

1. Such as life threatening or visceral disorders
2. Structural source
3. What has gone wrong causing pain to develop and resist.

II. Course of probable prognosis of this subject

Yoshino 2012 in a diabetic hypoglycemic hemiparesis of an elderly subject and has reported 200 cases. Mechanism of this was postulated to hypoglycaemic vasospasm (Miura et al, 2005 & Duh et al, 1994). Ronquist and Frithz et al 1992 related to hypoxia or ischemia. Fujikoka et al 2016 have recorded changes in brain such as cortex, basal nucleus substantia nigra, thalamus, hippo campus and Hasegawa et al 1996 severe transient hypoglycaemia causes reversible changes. Wainner et al 2003 have used spurling test for cervical radioculopathy with diagnostic accuracy and reliability. Neer and Hawkins Kennedy were used to rule of shoulder impingement syndrome and Mac Donald et al 2000 which have high sensitivity and specificity.

III. Combined evaluation of orthopaedic and neurological means why it's important

Cleland et al 2007 who have shown short team successful outcome with infrequent arm pain with sizable improvement in DASH among 975 subjects with cervical radioculopathy with physiotherapy based on (NDI) Neck disability index, Numerical Pain rating scale (NPRS), patient specific functional scale, globally rating of change where predictors such as >54 years dominant arm not affected, looking down, not

worsening symptoms, where cervical traction, manual therapy, deep flexor muscle strength to be effective.

Good et al 2011 have shown have recorded comorbidities influencing LBA (Low back ache) and LBA related leg pain using outcome measures sensitive to identify changes in function for body regions. Popovic 2019 have analysed an elderly man with moderate pain and weakness of right arm with hba1c, elevated triglycerides, obesity hypertension, NMRI revealed C6, C7, C8 plexopathy on right side, hence concluded diabetic neuropathy must be considered for neurologic diagnosis. This was very similar to this study subjects condition, co - morbities to be considered for diagnosis and treatment were insisted.

1. As clinical expert, physiotherapist should prior treating pain, should analyse probable causes and apply SOAP (Subjective, Objective, Assessment, Plan) strategy
2. If pain with associated loss of motor weakness then vascular, infective malignancy to be ruled out, treated by medical experts. Example for giving cervical traction to this subject with hypertonicity may have cervical myelopathy a contra indicated one. With the subject being a diabetic hemiparesis may be following hypoglycaemic incidents, other probabilities were cervical radioculopathy from her age, nature of job which were evidenced as below
3. Another possibility of this subject might have developed Monoparesis and without due medical intervention treating with physiotherapy may be unethical as being a diabetic might have developed higher glycemic levels. The following evidences display how comorbidities can influences on prognosis of subjects with arm pain and low back ache
4. Also with trapezitis, hypertonicity and weakness of shoulder might be with spinal cord compression due to tuberculosis, hence without due diagnosis and proper medication for example giving shortwave diathermy to this subject can be

highly harmful. Thus due evaluation and treatment by concerned experts, where physiotherapists role to refer promptly was more emphasized here

Mitchell et al 2005 highlighted on the importance of proper assessment and diagnosis to look for red flags for physiotherapy in acute painful shoulder, similar to this research thrust area. Acute pain and weakness of shoulder were found to be related to Rotator Cuff tear, painful arm syndrome, systemic disease, Adhesive capsulitis, history of cancer, repetitive movements as reported by Calis et al 2000; Miniaci et al 2002 as this subject being a diabetic and hyperlipidemia needs causative factor from this view, and duly treated by experts. Shoulder disorders exhibit similar features of many ailments, with lack of consensus and diagnosis, clinical assessment and compliance on treatment choices in a systematic review by Buchbinder et al 2003, which were duly supported by Cochrane database systematic review by Orchard et al 2013, that none of the clinical examination tests for diagnosing shoulder and neck pain has high sensitivity and specificity. However these forms the need for more research on shoulder disorders evaluation and treatment.

Lenza et al 2014 have recorded NMRI for accurate assessment of soft tissue and bone, similarly this research subject following NMRI was found to have cervical radiculopathy with C3-C4, C4-C5,C5-C6 with disc protrusion and spinal canal stenosis was treated by Orthopaedic surgeon as clinically improved. Later physiotherapy sessions were able to functionally restore (Right) shoulder activities. As shoulder pain were found to be related to depression (Gamble et al, 2002) and a decline in quality of life (Widar 2004) bio – psychosocial rehabilitation were used on this subject with counselling by the author with due therapy, reassurance enhanced her prognosis with greater functional recovery which were supported in a systematic review by Karjalaminen et al 2001.

Evaluation of being a female, post hysterectomy, and a diabetic, hyper lipedemia, Investigations revealed a low VD_3 and higher cholesterol level, and poor glycemic control, she was duly treated by physician, followed by consistent physiotherapy till

today the subject has near normal functions from right arm, these were evidenced by Kelley et al 2013.

INVESTIGATIONS GET DIAGNOSED AND MEDICALLY TREATED

Later to be rehabilitated with due physiotherapeutic means

Major purpose of this clinical research were:

1. Basic evaluation with muscle tone, movement analysis too clinical reasoning
2. Judiciously use electrotherapy, as not only to treat trapezitis and right shoulder pain, rather investigate further with due evidenced practice
3. Always ensure underlying cause to be treated as in this subject it could be an UMN or compression of neurological structure or stenosis as with rehabilitation using exercises establish proper diagnosis, thus ensuring maximal care of the subject.
4. Prompt reference with due evaluation, ensures better professional ethics by physiotherapist as well uphold higher standard of practice

Pain along with inability to use right shoulder of sudden development in an adult female can be due to a sphere of clinical conditions such as brachial palsy, acute stroke, cervical disc disorder, neuro vascular complications, fracture around shoulder. In this situation basic evaluation along with a referral report to an orthopaedic and neurophysician must compulsorily be sought as done in this presentation. Keeping above evidenced conditions, clinical reasoning for referral for further care helps to adhere ethics as well improve professional standard.

Rehabilitated later following orthopaedic and neurologist the subjects recovery with physiotherapy were discussed with evidence.

Health care, a team work with patient centric approach was more highlighted. Clinical reasoning skills, professional upholding of translating what was learned, at the same time practicing inter professional relationship were more emphasized in this research. Further research on each subject with every team members of health are on their role

can be attempted instead of each one elaborating their role separately were recommended.

CONCLUSION:

As a clinician, knowing and acting promptly by referring to concerned medical fraternity should be foremost in patient care. Due interaction among healthcare experts with due investigations and care can be great value in different clinical scenarios. This presentation where an unique patient multidisciplinary role using evidence.

Limitations of this research was it lacks long term further follow up. Further such clinical situations can be discussed which provide an insight of critical analysis and clinical therapist with due evidence. This research focused on how to go about in a clinical situation of acute complaints of shoulder a patient approaching physiotherapist with various clinical causes to be given a thought and not to mechanically treat the subject with electrical modalities. Thus establishing Scientific means with probable Causes were discussed with evidence for the benefit of clinical physiotherapists.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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