

ACUTE LOCKING OF THE CERVICAL SPINE

AN ANALYSIS OF FOURTEEN INCIDENTS TREATED IN A JOHANNESBURG PRACTICE

by Helen David BSc Physiotherapy (Witwatersrand).

Honorary Lecturer, University of the Witwatersrand. Private Practitioner.

INTRODUCTION

Schmorl and Junghanns¹ state that the mobile vertebral segment may become "locked" like any other joint. Maitland² describes acute locking of the cervical spine as "a very clearly defined syndrome, occurring most commonly in adolescents ... The syndrome has a typical history, protective deformity and a reasonably consistent site of pain" (p. 103). McNair³ explains the terminology: "The term acute refers to recent onset and not to the severity of symptoms, while the term locking is actually a misnomer, since the cervical spine is not truly locked, in that it cannot move in any direction but blocked, in that movement in some directions are mechanically restricted" (p. 350).

The patient presents with an asymmetric neck posture (wry neck or torticollis) and the therapist must differentiate this syndrome from other pathologies such as post-traumatic or spontaneous onset wry neck^{2,3}.

The pathology is uncertain, but a likely explanation is the sudden entrapment or nipping of synovial fringes or meniscoids between the zygapophyseal joint surfaces, resulting in sharp pain on movements which further close or narrow that joint^{4,5}. Thus extension, ipsilateral rotation and lateral flexion are blocked whereas flexion, contralateral rotation and lateral flexion are practically unaffected. The locking is classically caused by a very minor incident such as flicking the head.

AIMS

- To investigate the incidence and clinical presentation of acute cervical spine locking in a physiotherapy practice in Johannesburg.
- To analyse the treatment and the results of treatment in these cases.
- To suggest the most appropriate treatment approach for this syndrome.

MATERIALS AND METHODS

Over a four year period, from August 1988 to August 1992, 358 patients were treated for problems of the cervical spine (some patients being seen repeatedly for recurrent problems) by a single therapist in a part-time clinical practice in Johannesburg. Thirteen of these patients ie 3.6% presented with acute locking of the cervical spine. One patient presented twice over this period with the same problem thus making a total of fourteen incidents of cervical spine locking. Detailed records of all fourteen incidents had been kept and the data analysed.

RESULTS

Of the thirteen patients, five were male (one of whom presented with two separate incidents) and eight were female. The males ranged in age from 16 to 46 years with a mean age of 25 years and the females ranged in age from 16 to 32 years with a mean age of 23 years. Nine patients were between 16 and 25 years of age.

Occupations varied and included a secondary school pupil, university student, bank teller, housewife and financial analyst. Sporting activities varied from zero (6 patients) to a single sport (four patients) to several sports (three patients).

Clinical presentation

Observation: The classical postural deformity of lateral flexion with some degree of rotation was seen in all cases and there was occasionally a degree of flexion as well. The extent of the deviation was variable. In eight cases the head was deviated to the left, indicating a locked joint on the right while in six cases the deviation was to the right, indicating a locked joint on the left. In the patient who had two incidents, it was interesting to note that the deviation was to the left once and to the right once.

History: The incident causing sudden pain and locking was classically minor and fell into the following groups:

- Woke in the morning - shifted, stretched, turned over or got out of bed (nine incidents).
- Early morning - washing or drying hair after shower and jerked head (two incidents).
- Aware of moving during the night (one incident).
- Could not recall an incident. The condi-

SUMMARY

Thirteen patients with acute locking of the cervical spine were treated in a physiotherapy practice and their data were analysed. The patients were mostly adolescents and young adults of both sexes. The upper cervical spine was involved in most cases. The accurate diagnosis and appropriate treatment of this clinical syndrome is described. This condition responds readily to specific mobilisation or manipulation techniques.

OPSOMMING

Dertien pasiënte met akute gesluite gewrig van die servikale werwelkolom is in 'n fisioterapie praktyk behandel en die data is geanaliseer. Die pasiënte is meestal adolessent en jong volwassenes van beide geslagte. Die boonste gedeelte van die werwelkolom is betrokke in meeste gevalle. Die akkurate diagnose en geskikte behandeling van hierdie kliniese sindroom is beskryf. Hierdie toestand reageer goed op spesifieke mobilisasie of manipulasie tegnieke.

tion was present in the morning although there had been no ache or stiffness the previous day. It is possible that the incident was a movement during the night but the patient was not aware of it (two incidents).

Thus all 14 incidents of acute locking occurred either during the night or within seconds, minutes or a couple of hours after waking. For seven patients this was their first episode; for the others it had occurred at least once and as many as six times before in one patient.

Area of pain: There was local neck pain on the locked joint side in all cases, with a spread of ache into the suprascapular area in seven cases.

Active movements: These were limited and caused pain in the classic way in nine cases ie. extension, ipsilateral rotation and lateral flexion were blocked whereas flexion, contralateral rotation and lateral flexion were practically normal. In five cases flexion was also somewhat limited but not blocked. Pain was always sharp and severe at the end of available range of motion in the blocked directions but there was minimal or no pain when at rest in the position of deformity.

Passive movements: Passive accessory intervertebral movements (PAIVM's) and passive physiological intervertebral movements (PPIVM's) as described by Maitland⁶ were used to determine the exact joint which was involved. Unilateral postero-

continued on page 10...

anterior pressure on the side of pain were found to be useful but the lateral flexion PPIVM, performed in the closing direction towards the side of pain, was found to be the most useful movement. This PPIVM is described by Maitland on page 204⁶.

Intervertebral joint involved	Number of cases
C1/2	2
C2/3	6
C3/4	3
C4/5	1
C5/6	1
C6/7	1

As can be seen from Table I, the upper cervical spine was most frequently involved. It was noted that when the lower cervical joints were involved, the postural deviations were greater.

Treatment

Initial treatment is aimed at "unlocking" the locked joint and this must be achieved at the first treatment session.

The treatment techniques which were found to be most useful in achieving this aim were:

- Longitudinal movement as described by Maitland on pages 203 to 205⁶, but performed initially in the direction of the deformity.
- Lateral flexion as described by Maitland on pages 219 to 221, ie away from the side of pain performed in the direction to open the side of pain.

One of these techniques was chosen and performed as a IV- for about 20 seconds, after which locking was reassessed using the lateral flexion PPIVM. The technique was progressed to a IV or IV+ if the joint was still locked. If there was still no change, the alternate technique was performed in a similar sequence. The treatment technique was stopped once the movement was no longer totally blocked on the lateral flexion PPIVM reassessment, even if the gain in range was only minimal ie a few degrees.

Once the joint was assessed to be unlocked, treatment was aimed at the relief of accompanying pain, muscle spasm and inflammation. Modalities used included ultrasound, ice, gentle massage, unilateral postero-anterior pressures as described by Maitland on pages 211 and 212⁶ performed on the painful side or on the unaffected side (angled medially) as a II or II+. If the deformity was severe and the pain still fairly severe, a soft collar was suggested for the remainder of that day. Advice was

given regarding positions of comfort and rest. One patient was taking an anti-inflammatory drug prescribed by his doctor, and two patients were taking mild anti-inflammatory drugs of their own accord.

If the joint failed to unlock with the two techniques described above, a small-amplitude localised manipulation, the transverse thrust, as described by Maitland on page 232⁶ was used to open the side of pain. This was done at the first treatment session and the lateral flexion PPIVM was once again used to check whether unlocking had occurred. This manipulation was only required in 2 out of the 14 incidents.

In the majority of cases, improvement was rapid, all movements regaining 75% of normal range within 24 hours. In five cases, normal movement was regained within 24 hours. Number of treatments required for full recovery (defined as no subjective pain or stiffness and full-range cervical movements with no pain on over-pressure) varied from one (in five cases), two (in seven cases) to three (in two cases).

After the initial treatment session, any subsequent sessions were aimed at further reduction of pain, muscle spasm and inflammation. Treatment 2 was always on day 2; treatment 3 was given when most convenient and could have been on day 3,4 or 5.

In cases where this was not the first incident of locking, additional aims of treatment were to teach stabilising exercises and correct posture and to give prophylactic advice. Correct sleeping positions were stressed as several of the patients were in the habit of sleeping in the prone position, often with a pillow which produced hyperextension combined with the rotation. As the early morning is a vulnerable time, patients were told to take care with movements of the head and neck in the mornings and to avoid any rapid, flicking movements of the head.

DISCUSSION

The incidence of acute locking of the cervical spine was found to be 3.6% of all cervical spine patients in this study. It is possible, however, that this syndrome is more common than this study would suggest but that the patients are not being directed towards the physiotherapist.

Acute locking of the cervical spine can be diagnosed by a typical postural deformity, history, area of pain, active movement pattern limitation and blocked end-feel restriction of the lateral flexion PPIVM. This PPIVM was found to be the most useful single technique for assessing the exact intervertebral level of the locking.

If the patient presents soon after the incident, preferably on the same morning, treatment is very effective, requiring only one or two sessions. Two patients required

three sessions and this was probably because one patient only presented on the third day after the incident and the other patient had a long history of cervical spine problems and headaches.

The treatment techniques which proved effective in unlocking the apophyseal joint which had been identified as being locked were longitudinal movement or lateral flexion (mobilisation techniques) and transverse thrust (a manipulation technique)

The localised manipulation was required in only two out of the fourteen incidents. This is a very specific procedure and should only be undertaken by adequately trained orthopaedic manipulative therapists. It is essential not to manipulate a wry neck due to other factors such as trauma or spontaneous onset. In the case of trauma, the history would indicate a more major incident and active movements would be limited in a different pattern. In the case of spontaneous onset, the history will generally indicate some pain or stiffness on the previous day(s) and there will be no recollection of even a minor incident. In both cases, on testing the closing lateral flexion PPIVM, the movement will be found to be limited and painful but not blocked, as would be the case with a locked joint.

CONCLUSION

Acute locking of the cervical spine is a relatively uncommon but easily identifiable clinical syndrome which responds readily and dramatically to appropriate treatment when accurately diagnosed. Gentle mobilisations of the affected apophyseal joint are suggested as the mainstay of treatment, manipulation being necessary only rarely.

It is suggested that physiotherapists educate the public and the medical profession about this syndrome so that more patients may benefit from the treatment which physiotherapists can provide.

REFERENCES

1. Schmorl G, Junghanns H. *The human spine in health and disease*. 2nd American Ed Grune and Stratton New York 1971;376.
2. Maitland GD. Acute locking of the cervical spine. *Australian Journal of Physiotherapy* 1978;25:103-109.
3. McNair JFS. Acute locking of the cervical spine. *Modern Manual Therapy for the vertebral column* Ed. G P Grieve; Churchill Livingstone, Edinburgh 1986;34.
4. Grieve CP. *Common vertebral joint problems*. Churchill Livingstone, Edinburgh 1981.
5. Bourdillon JF. *Spinal Manipulation*. 3rd Ed Heinemann Medical, London.
6. Maitland GD. *Vertebral Manipulation*. 5th Ed. Butterworths, London 1986.