Cervical Pain Syndrome as Consequence of Computer Use in Daily Practice

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SUMMARY

Neck pain syndrome is described as: Pain in the neck affects at least once in a lifetime every second person, and also 10 % of adult population suffers from chronic pain in this area. It is more often among women. A constant increase of incidence in the industrialized countries is noticed. It is also the leading cause of referral to physical rehabilitation. It is causing huge financial costs in the health care system. There is no consensus regarding Neck pain syndrome management, but many therapeutic modalities are applied: a) to isolate (or manage) rare, but potentially dangerous states that can cause neck pain; b) identify and treat each co morbid state and risk factors; c) provide resources and information's, especially about regarding use computers in daily practice. Physical and manual treatments can be: a) physical therapy can assist to achieve early mobilization and return to daily activities; b) active physical therapy, mobilization, manipulation and exercises can assure short time relief of neck pain; c) home based exercises, as shown by this research, can significantly prolong the pain free period, in case of patients with the chronic syndrome; d) Medications, combined with the exercise program and ergonomic improvements can be effective solution for the chronic or recurrent neck pain. Intensive treatments in Neck pain syndrome are: a) Surgical and other intensive treatment (rarely indicated); b) invasive treatments includes and percutaneous radiofrequent neurotomy and cervical epidural analgesis.

Key words: Cervical pain syndrome, computers.

1. INTRODUCTION

Neck pain syndrome is described as: Pain in the neck affects at least once in a lifetime every second person, and also 10 % of adult population suffers from chronic pain in this area. It is more often among women. A constant increase of incidence in the industrialized countries is noticed. It is also the leading cause of referral to physical rehabilitation. It is causing huge financial costs in the health care system.

During period from 2005 to 2007 we realized our research in Center for physical therapy and rehabilitation Stari Grad Sarajevo with aim to examined consequences of using computers as giving Pain Neck Syndrome – Cervical Syndrome.

The outcome was measured by the following variables: a) pain (e.g. measured on visual-analogue scale); b) disablement (e.g. measured by Neck Disability Index, or Northwick Pain Questionnaire); c) days on sick leave; d) use of medications; e) use of health care services; f) rate of radiology imagining (1,2).

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Medication therapy is applied as: a) with analgesics (which achieve short term relief from pain); b) they are prescribed according to the pain intensity, personal references, and presence or lack of side effects; c) Paracetamol or nonsteroid anti

rheumatoid medications (NSAID) should be taken in same time intervals; d) Diazepam, 3-7 days can be used in patients with severe spasm; e) minotriptiline or gabapentin can be useful in case of chronic cervical syndrome.

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The perspectives are the following: In general, evidence degree for a neck pain is quite low. Determination of guidelines for better systematization of therapy is important prerequisite for the future efficacy researches of various concepts. This problem deserves more attention by researches, in order to determine realistic prevention strategy, improve quality of life and work, and for the rational use of the health focused financial resources. Speaking about this research, we are planning to repeat it on the larger sample, in order to increase reliability of the research results.

2. GOALS

The goals of the research were: a) to identify possible serious and specific causes of neck pain; b) to identify psychological and social barriers for recovery; c) to determine the degree of dysfunction caused by nonspecific neck pain; d) reduce pain; e) improve functioning and reduce disablement; f) prevent recurrences and development of chronic forms.

3. METHODS

As a sample for this research we selected patients with the verified neck pain

TABLE 1. *Diagnosis, number of patients on physical rehabilitation during 2006; cervical syndrome. Source: Protocol of the Center for physical rehabilitation Old Town (CBR) Sarajevo; for 2006.*

Diagnosis	Female	Male	Total 516
Cervical syndrome	291	51	342 (66.27 %)
Cervical brachialgia	96	25	121 (23.44 %)
Vertebrobasilar sy.	21	9	30 (5.81 %)
Cervical cephalic	18	5	23 (4.45 %)
States after surgery C5-C6	1	0	1 (0.19 %)

syndrome, 120 of them in total which we divided into two groups with 60 patients. One group is treat-

TABLE 2. *Basic demographic and clinical data*

Gender, female	A Training group n=60	B Control group n=60
Mean age $\pm$ SD,	47 (7)	46,85 (6)
Profession, clerk, n,	60	60
Computers use, n,%,	54 (90 %)	51 (85%)
Symptoms duration in years	5 (4)	4 (5)
Hand shake normal, n,	60	60
Tobacco smoking, n, %.	12 (20)	10 (17)

ed with the classic rehabilitation method and the other cohort underwent active exercises during a six months period. For testing we used WAD scale and NDI questionnaires, which are approved all around the world and described in available literature.

4. RESULTS

According to the protocol, at the Center for

TABLE 3. *Scores distribution of the patient's clinical state after 6 months of research. For the statistical analysis of the results used methods are Chi-square test. $X^2 = 34.92$, $p = 9.57 \cdot 10^{-8}$. $p < 0.001$ (Yates correction $p = 2.14 \cdot 10^{-5}$)*

Evaluation of clinical state	Training group n = 60		Control group n = 60	
	f A	%	f B	%
5 Without problems - cured	6	10	0	0
4 Significantly improved	36	60	9	15%
3 Without significant change	12	20	36	60%
2 minimal change	6	10	12	12%
1 Worsened condition	0	0	3	0.5%
Σ	60	100%	60	100%

TABLE 4. *Values of dysfunction self evaluation (NDI score 0- 50)*

Variable	Training group A n=60		Control group B N=60	
Values	A1	A2	B1	B2
Mean value X	20.9	12	20.1	19.2
Variance	5.7582	47.9	2.7338	4.7472
St. deviation denomin. n-1	2.3996	6.9	7.4734	22.5356
T test	A1-A2 8. t=9.26	p<0.0001	B1-B2= 0,9 t=1,47	P=0.07not significant
T test baseline	A1:B1 p=0.09			
T test terminal	A2:B2 =7.1 t=7.2485CI 95% rang- ing 5.2 - 9.1	p<0.0001		

physical rehabilitation Old Town in Sarajevo, neck pain syndrome (Cervical pain syndrome) was the leading reason for the outpatient treatment. In the time period from January 3rd until December 31st 2006 there was a total of 6163 specialist evaluations, first or control ones.

During the same time period physical rehabilitation started 516 patients with the neck pain syndrome from which: 426 women (82.3%) and 90 men (17.7 %).

Obviously there are more female patients with the neck pain, which is in accordance with the results of the epidemiology studies conducted in EU.

FIGURE 1. *Sex ration within the examined sample*

FIGURE 2. *The frequency of treated CS patients*

USA and Canada.

Frequency of disease compared to the number and patients gender with the neck pain syndrome which had physical therapy in 2006 s presented in the table 1.

Furthermore, in majority of patients axial neck pain was diagnosed or not complicated neck pain syndrome (G 54.2), but for the patient in Center for physical rehabilitation much more frequent is cervical brachial compared to the reference data.

In baseline, demographic and clinical data for the 120 respondents did not have significant statistical deviations (table 2). Average patient's age is 47 years, with very low variation coefficient. Variation coefficient; V(A)= 13 % (very low) V(B)= 13% (very low). Also within baseline, the pain (VAS) and self estimated functionality impairment (NDI), was also similar for both groups. All respondents N = 120

FIGURE 1. Achieve the control of the body posture by adjusting the chair, desk and the computer to assure adequate position for the spine. 1. Adjust the monitor directly in front of you so the head does not move and stand straight. 2. Never hold the phone between the head and the shoulder, use hands or phone holder. 3. Use the chair with arm rests to support the forearms, with relaxed shoulders. 4, 5. Adjust the height of the chair so you can keep your feet on the floor. 6. Keep your back aligned to the chair.

had the initial evaluation of functioning status 3 (moderate problems which reduce quality of work and performance). After six month reevaluation, result of clinical state evaluation was as presented in table 3. All the respondents are women, because the male patients did not fulfill the research criteria's. All the patients were clerks – sitting professions, 85-90 % of respondents use computer during working hours (sometimes all day). Up to 20% of patients smoke cigarettes.

After final reevaluation, the research results are presented in table 3.

At the risk level less than 1% we can conclude that after 6 months reevaluation there are significant differences in clinical state levels of the patients from the training (A) and the control group (B). If we analyze the relationship between frequencies in the table, we can conclude that the patients – but not all, which exercised in their homes, have better functional status and reduced pain, and 10% of them did not have any problems.

But, also 15% of patients that did not exercise within home program have improvement in clinical status, which can be explained with the usual, spontaneous re-

mission of the neck pain syndrome. In this group of patients there was 0.5% of deterioration, while in case of patients that exercised we did not notice worsening of the clinical state.

One of the indexes which indicate level of achieved treatment quality can be presented as the divider of the percent with same score in the training and control group. We choose to present index of quality based on comparing the index for the score 5 and 4. After 6 months reevaluation, percent of score 5 at the training group was 10% and 0 % for the controls. In this manner the calculated index for the first group is $10:5=2$, and for the second one $0:5=0$. Score 4 had 60% of patients that exercised within home program, and the 15% of patients that did not exercise. Quality index is $Q_k = 60:4 = 15$ and $Q_k 15:4 = 3.75$.

According to probability laws, index of quality can be used to get a general insight in the advantages of one over other treatment method, which in taking of general doctrine attitudes have extreme importance.

FIGURE 2. PROPER AND IMPROPER POSTURE

SPINE – keep the natural curve, loin support

ARMS – keep close to the body, elbow angle 70-90°

WRIST – forearm and hand should be straight

MONITOR - at the eyes height (0-30 degrees)

5. DISCUSSION

According to the results of the conducted research, continuous and long lasting exercised to strengthen the neck muscled with the home exercise program are efficient in the treatment of patients suffering from neck pain syndrome.

Ten percent of the patients that exercised did not feel the subjective problems, which 60% of them had significant reduction of pain, reduction in use of analgesics and anti rheumatic medications, with improvement in local and general functioning status as well as daily activities in life and work, and that is statistically highly significant advantage compared to the patients that did not exercise.

If we know that the neck pain syndrome in majority of developed countries, and even in developing countries is the leading cause for referral to the family doctor and physical medicine specialist, and according to the date of official statistics for Bosnia and Herzegovina, one of the most often illness in the general practice for 2004. Illnesses of the bone-muscle system are at the third place with 518 case on 10000 inhabitants, and that in total cost of health system also takes high place, that this is alarming moment to focus research on this problem.

Work in the department of physical and family medicine, organized at the local community level, provides good basis for the scientific research and possibility to implement prevention programs, with necessary interdisciplinary and cooperation between teams.

Cervical part of spine is exposed to permanent movement and different mechanical influences, so it rather early is affected with the laws of aging. High morbidity rate for the locomotion apparatus diseases, according to the opinion of many scientists, is caused by the today life circumstances without suf-

ficient motion. Because of that it is logical that adequate exercise can have more than one benefit. One of the most common causes for this is everyday use of computers, especially inadequate sitting position in front of the computer desk and mouse use.

Speaking of neck pain syndrome, it would be good, through the activity of the physiatry section, to establish "guides" for keeping record of the patients with this cause, in order to make comparative documented basis which is important prerequisite for the research in area of physical therapy and rehabilitation, and with that also make easier presentation of the excellent results achieved in this area.

6. CONCLUSION

The perspectives are the following: In general, evidence degree for a neck pain is quite low. Determination of guidelines for better systematization of therapy is important prerequisite for the future efficacy researches of various concepts. This problem deserves more attention by researches, in order to determine realistic prevention strategy, improve quality of life and work, and for the rational use of the health focused financial resources. Speaking about this research, we are planning to repeat it on the larger sample, in order to increase reliability of the research results.

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