



# Symptoms of spinal dysfunction mimicking systemic diseases (Ogundana Syndrome): a review of 35 cases treated with manual therapy over 30 years

MICHAEL O. EGWU<sup>1</sup>, VINCENT C.B. NWUGA<sup>2</sup>

## Abstract

**Objective and Method:** Symptoms manifesting in other parts of the body signaling the existence of spinal dysfunction (Ogundana Syndrome) in patients (N = 35, age range 20-56yrs; mean age 36yrs) diagnosed to have systemic diseases but treated with manual therapy were identified after a 30 year case note review.

**Results:** Incipient parkinsonism (general edema and expressionless mask face), stroke (weakness of one side of the body), tinnitus (headache with noise in one or both ears), breast cancer (breast pain) and dyspnea (difficulty in breathing) were some physician diagnoses and clinical symptoms presented. One percent rate occurrence was noted affecting significantly more females (74%) than males (26%,  $P < 0.001$ ). This involved people with family history of back pain (66%) engaged in low income occupations (farming 40%, trading 25%, artisans 15% and civil servants 20%). Symptoms got better after vertical oscillatory pressure therapy to appropriate spinal regions. Duration of treatment was influenced by duration of spinal dysfunction prior to therapy and age of younger patients.

**Conclusion:** One percent of patients with spinal dysfunction misdiagnosed to have systemic diseases due to misleading symptoms are finally referred for physiotherapy of manifesting symptoms. Manual therapy to the appropriate vertebro-geographic region(s) relieves the symptom (s) without prejudice to existing diagnosis.

**Keywords:** Spinal dysfunction, Systemic diseases, Mimicking symptoms, Ogundana Syndrome, Manual therapy

## Introduction

Back pain is a long recognized ailment challenging clinicians till today and it is conventionally treated using chemotherapy, surgery and physiotherapy [1-3]. Physicians refer patients with non-specific back pain to the physiotherapist while retaining those with organic disease for chemotherapy or surgery indicating

that accuracy of diagnosis is an absolute necessity to ascertain the type of treatment needed [4-6]. However, it is known that some patients with spinal dysfunction (SD) escape the medical dragnet due to misleading symptoms and get referred to other medical specialties [4,5]. Anecdotal observation and clinical experience show that some of these misdiagnosed patients

<sup>1</sup>Department of Medical Rehabilitation, Faculty of Basic Medical Sciences, College of Health Sciences, Obafemi Awolowo University (OAU) Ile-Ife & OAU Teaching Hospitals Complex and E.M.O Physiotherapy Clinic Ile-Ife, Nigeria

<sup>2</sup>Bodija Physiotherapy Clinic, Bodija, Ibadan & Department of Physiotherapy, OAU Teaching Hospitals Complex and Dean Faculty of Basic Medical Sciences OAU Ile-Ife, Nigeria

## CORRESPONDING AUTHOR:

Michael O. Egwu

Department of Medical Rehabilitation, Faculty of Basic Medical Sciences, College of Health Sciences, Obafemi Awolowo University, Ile-Ife Nigeria  
egwumo@yahoo.com

**Funding:** This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.



are eventually referred for symptomatic physical therapy when all other effort fails.

In 1977, one of such patients (Ogundana) was referred for bladder training with a diagnosis of dyspnea and bladder dysfunction, but was found (on mechanical examination of the spine) to have concomitant lumbosacral and cervicothoracic SD and back pain. Her breathing and renal function normalized after manual therapy. Thereafter, patients that presented with such sinister symptoms had their spine examined and those with SD were treated using manual therapy. In this report, the result of a review of the case files of patients whose symptoms manifested in other parts of the body with reflective medical diagnosis but was successfully treated using manual therapy over 30 years is presented [6].

### Methods

The case notes of patients referred to the authors from 1977 to 2007 were reviewed and those that presented with the characteristics of Ogundana Syndrome (OS) were selected for further review and analysis. File selection criteria included that diagnosis of the referring physician or surgeon did not suggest the presence of SD, patient presented with at least one of the characteristic symptoms (numbness, unilateral headache, urinary retention breathing difficulty, etc.) and symptom as reported by the patient reduced (at least 80%) after manual therapy.

Patients were referred by physicians and surgeons from Obafemi Awolowo University (OAU) Health Centre and

OAU Teaching Hospital Complex Ile-Ife. From these case files, information such as age, sex, occupation, self reported origin, duration, intensity (in a numerical rating scale of 0 – 100) and spread of the symptom (s) and any associated problems were obtained. Mechanical tests carried out were gleaned from the record alongside the vertebral region or body part where symptom was located and/or triggered. The family history of back pain, diagnosis of the referring physician or surgeon, manual therapy technique applied, spinal segments mobilized, the number, frequency and duration of therapy needed for the patient to achieve at least 80% recovery were also gleaned from the record. In addition, observations made by the authors over a period of 30 years while in the process of treating the patients in question will also be reported. This study was approved by the Ethics and Research Committee of the OAU Teaching Hospital Complex Ile – Ife.

Descriptive statistics of range, mean, standard deviation and percentage were used to describe the patient's age, treatment duration, occupational distribution and interval between onset of symptoms and search for help. Student's t-test was then used to compare the distribution of symptoms between male and female and sex differences in the interval between onset of symptoms and search for help. Level of significance was set at 0.05. Data was analyzed using the SPSS 11.0.

### Results

Out of 3,754 case files reviewed, only 37 (1.0%) of them met the inclusion cri-

teria. However, some parts of the record of two subjects were no longer readable. This report is therefore based on further review of the 35 valid files.

Patients were treated either at the Manual Therapy Laboratory in the Department of Medical Rehabilitation OAU, Physiotherapy Department OAU Teaching Hospital Complex or at E.M.O. Physiotherapy clinics all in Ile-Ife, Nigeria. The mechanical diagnostic principle employed to determine referred patients with SD was that spinal mobility test should be positive (at least one direction of spinal movement elicited pain) and digital pressure (mild postero-anterior compression of the spinous process) elicited pain in the spine or aggravated the reported symptom(s) where it is located. All the patients were treated by the two authors jointly or respectively and each treatment session lasted 20-30 minutes. The frequency of treatment was two - three times per week (depending on the patients post treatment response) using Vertical Oscillatory Pressure (VOP) technique.

None of the patients (N=35, age range 20-56yrs; mean age 36yrs) had a history of trauma but the majority (21, 66%) had a family history of back pain. Most of the patients with OS were engaged in low income occupations (farming 40%, trading 25%, artisans 15% and civil servants 20%). Distribution of the SD (Table 1) was as follows: 13(37%) cervical, 4(11%) thoracic, 11(31%) lumbo-sacral and 7(20%) gross spinal. The diagnoses on which medical treatment was based included ?Ovarian cyst, bladder dysfunction, dyspnoea, appendicitis, incipient parkinsonism, head pain,



migraine, tinnitus, transient ischemic attack, stroke, eye pain, ?breast cancer, ?hypertension and erectile disorder. The characteristic symptoms of OS are also presented in Table 1. Groin pain (N=2), urinary retention (3), breathlessness (3), scalp tenderness (2), breast pain (1) and nose/scalp heaviness (2) were symptoms found only among females. Pain near the umbilicus (3), general edema/expressionless mask face (4), headache with sound inside the head (5), weakness of one side of the body (4), painful eye (2), chest pain (2), involuntary penile erection (1), and headache associated with noise in both ears (4) affected both male and female. No symptom affected males only.

Significantly ( $P<0.001$ ) more females (26, 74%) than males (9, 26%) were affected (Table 2). This gender

difference was more in patients of age range 30-56 yrs (N=28, 79% vs. 21%) than in those of age range 20-29 yrs (N=7, 57% vs. 43%). The interval between onset of symptoms and search for help as reported by the patients ranged from 2 to 390 weeks with females having significantly ( $P<0.01$ ) longer (137 weeks) average duration of symptom than males (96 weeks). Middle aged patients (40-56 yrs; N=16, 46%) were the most affected, accessing treatment late (symptom duration = 336 weeks; male 280, female 390) and requiring higher number of treatment (total 23; male 21, female 24). Patients of age range 20-29 and 30-39 years accessed treatment faster (symptom duration = 4 and 6 weeks, respectively), and required less number of treatment (5 and 11, respectively) over 2 and 4 weeks respectively.

Patients with gross spinal pain presented variable combination of symptoms including weakness of one side of the body. From our observations, the intensity of patient's pain and other symptoms rose during treatment but became less than the initial intensity post treatment. However, some patients (especially those with long duration of symptoms) reported no change or even a rise in symptom intensity during the first two sessions of treatment. Some patients reported weakness not due to over exertion (lassitude), a feeling of impending vomiting (lanquer) and a sensation of lack of equilibrium (vertigo) after treatment, all of which normalized after 10-15 minutes rest.

## Discussion

The word syndrome refers to a combina-

Table 1. Symptoms of SD mimicking OS, physician diagnoses and regions mobilized using Vertical Oscillatory Pressure

S/N	Symptoms	No. of patients	Physician Diagnoses	Regions Mobilized
1.	Groin pain (F)	2	? Ovarian cyst	T11-S4
2	Urinary retention + high respiratory rate (>40 b/m) (F)	3	Bladder dysfunction/ dyspnoea	T11-S4, C2-7
3	Pain near the umbilicus (F2, M1)	3	appendicitis	T4-L3
4	General odema, expressionless mask face (F2, M2)	4	incipient Parkinsonism	
	all vertebrae			
5	Scalp tenderness (F)	2	head pain	C1-C5
6	Headache, constant cricket or clicking sound inside head (F3, M1)	4	migraine (2), tinnitus(2)	C1-C6
7	Weakness of one side of the body (F2, M2)	4	transient ischeamic attack(1), stroke(3)	all vertebrae
8.	Headache + noise in ears (F3, M2)	5	tinnitus	C1-C5
9.	Breast pain(F)	1	? Breast cancer	T2-T6
10	Chest pain (M1, F1)	2	Pain in the chest	T2-T6
11	Painful eyes (F1, M1)	2	eye pain	C1-C5
12	Nose and scalp heaviness (F)	2	? Hypertension	C1-C4
13	Involuntary penile erection (M)	1	erectile disorder	L2-S4

F = Female; M = Male; C = Cervical Vertebrae; T = Thoracic vertebrae; L = Lumbar vertebrae; S = Sacral vertebrae; b/m = beats per minute.



Table 2. Influence of age and symptom duration (weeks) prior to treatment (Rx) on number (No.) of treatment and treatment duration of patients with symptoms of SD mimicking OS

Age group (Years)	Sex	No. of patients	Average duration of symptom prior to Rx. (Mean $\pm$ SD)	Average No. of Rx.
20-29	Male	03	4 $\pm$ 1.0	4
	Female	04	4 $\pm$ 1.5	6
	Total	07	4 $\pm$ 2.2	5
30-39	Male	02	5 $\pm$ 2.0	12
	Female	10	7 $\pm$ 3.0	10
	Total	12	6 $\pm$ 2.5	11
40-56	Male	04	280 $\pm$ 16.0	21
	Female	12	390 $\pm$ 15.4	24
	Total	16	336 $\pm$ 15.7	23
20-56	Male	09	96 $\pm$ 7.0	13
	Female	26	137 $\pm$ 6.6	13
	Total	35	115 $\pm$ 6.8	13

SD = Standard Deviation

tion of symptoms and/or signs that commonly go together, which may show the existence of a particular disease [6]. OS therefore refers to signs and symptoms of SD manifesting in other parts of the body, mimicking systemic disease (s) or disorder (s) that can be treated by manipulation of the spine.

In this study, the case files of 35 patients treated over 30 years were reviewed in order to identify their socioeconomic characteristics, occurrence rate, physician diagnoses, symptoms presented and how they were treated. Information concerning pain intensity as measured using a numerical rating scale of 0 – 100 was only used as an inclusion criteria, therefore, no data on pain intensity was presented. However, it should be noted that the therapeutic effect was assessed by repeating the initial spinal mobility and digital pressure tests

to ascertain recovery or otherwise of symptoms with 80% as cut off score for effective therapy.

The results revealed that only one percent of the studied population was affected. Groin pain, urinary retention, breathlessness, scalp tenderness, breast pain and nose/scalp heaviness as symptoms found only among females while involuntary erection was found in one man only. Other symptoms such as pain near the umbilicus, general edema and/or expressionless mask face, headache with sound inside the head, weakness of one side of the body, painful eye, chest pain and headache associated noise in both ears affected both male and female.

For one to understand how OS may arise from SD, a clear knowledge of how aging and SD lead to back pain is important. The pathogenesis of SD has been linked with degenerative changes

associated with aging. In homosapiens, growth is known to stop at about 29 years old while degeneration sets in at about 32 years old and progresses thereafter [7]. When degeneration sets in, the intervertebral disc water content gradually reduces causing it to shrink, tear and sometime prolapse. Thus, it becomes unable to correctly attach space, restrain and position its vertebrae and its function of absorbing shock and distributing pressure get impaired. The cartilaginous end - plate thins and cracks while the vertebrae experience osteoporosis and develops osteophytes; ligaments get lax and facet joints develop arthritis [7,8]. However, it is known that degenerative changes may not necessarily cause pain and the youngest patient seen with OS in this study was 20 years old.

Nevertheless, degenerative changes and other forms of nerve/nerve root ir-



irritations can place the sclerotome, motor, sensory, and autonomic systems in hyper - excitable state, increase blood vessel tone and facilitate the release of endogenous algescic chemicals that may further irritate nociceptors. Irritations of nociceptors also facilitate spinal segment sensitization, motion segment fusion, deposition of collagen and hypomobility thus priming the affected vertebral region for more pain and other symptoms derivable from that region [2, 9]. If identified and treated at this point, pain and associated symptoms reverses as the affected spinal nerve or nerve root irritation and motion segment mobility are normalized.

However, if it is not treated, symptoms emanating from the primary SD may become less noticeable in the face of growing associated symptoms. This may be so because, recent physiological evidence shows that continuous ectopic discharge of noxious impulses from nerve irritation sustains back pain and other symptoms by triggering or enhancing sinusoidal voltage oscillation in dorsal root ganglion membrane potential. Therefore, by convergence and ectopic activation of referred and radicular symptoms (including pain), signs and symptoms generated in one part of the body may be felt in many other distant parts of the body [9]. This explains how OS originates from SD, but whether the symptoms observed in the present study represent the totality of spinally referred symptoms mimicking systemic disease (s) or disorder is open to speculation.

The physiology of convergence and ectopic activation of referred and radicular symptoms has long been explained.

Merskey and Bogduck [9], defined referred pain as pain perceived as occurring in a region of the body topographically distinct from the region in which the actual source of pain is located. They explained that the anatomical bases for spinal referred pain (symptoms) are convergence. That is, afferent fibers from the vertebral column synapse in the spinal cord with second-order neurons that happen also to receive afferents from other nerves. In the absence of any further localizing information, the brain is unable to determine whether the information it receives from the second-order neuron was initiated by the vertebral afferent or the other convergent fibers, and so attributes its origin to both. Convergence is segmental in nature but may also occur between consecutive spinal cord segments resulting in more disparate patterns of referred symptoms as seen in this study. For example, convergence between afferents of the trigeminal nerve from the third cervical spine nerve may have resulted in upper cervical pain being referred to the forehead.

In contrast, when there is radicular pain, their peripheral axon terminals are not the site of stimulation. Ectopic activation occurs as a result of mechanical deformation of a dorsal root ganglion, mechanical stimulation of previously damaged nerve roots, inflammation of a dorsal root ganglion and possibly by ischemic damage to dorsal root ganglia. Thus the urinary retention that stopped after VOP may have been as a result of spastic neuropathic bladder since the nerve supply to the bladder is from the upper lumbar and sacral ventral rami (S1-S4). Similarly, the occasional invol-

untary erection that stopped may have been caused by mechanical deformation of lumbo-sacral nerve roots or ganglion via the pudendal nerve (S2-S4) and probable ectopic activation of the prostatic nerve plexus. The chest and breast pain may have resulted from mechanical stimulation of previously damaged upper thoracic (T1-T5) nerve roots through the intercostals mesh. Similarly, it is common knowledge that the diaphragm is responsible for about 70% of normal respiration and it derives its sole motor supply from the phrenic nerve roots (C3-C5). Therefore, the respiratory distress that responded to VOP may have resulted from mechanical stimulation of previously damaged phrenic nerve roots or inflammation of its dorsal root ganglia [10].

Romanes [14] explains that the irritation of the cochlear part of the vestibulocochlear nerve may cause noise in the head. This noise may be ringing, buzzing, hissing, singing or roaring and may also result from pressure or distortion changes of the occipito-atlantic interface characterized by other symptoms such as pains in the head, neck, ear, tongue, nose and eye, impaired hearing and dizziness, which were all observed in this study. Also, digital pressure to the upper cervical (C1/C2) increased the intensity of cervical and head pain and in this case sound similar to that produced by mole cricket (*Gryllotalpa Africana*) suggesting that upper cervical spine dysfunctions inputs into its presence or maintenance. It is therefore important that the vertebro-geographic segment of the spine be examined mechanically along the myotome dermatome and sclerotome for





referred and/or convergent symptoms of OS.

It is of particular note that all the patients with OS whose case notes were reviewed (N=35) had SD but inadvertently did not complain of back pain except when provoked. This behavior could be due to the peculiar nature of their care seeking habit and a reflection of the psychosocial context in which the initial back pain occurred [3,12]. In Africa and most developing countries, pain, especially back pain is culturally interpreted as a harmless experience that accompanies ageing which need not be worried about or complained of. Consequently, people only complain of symptoms that are perceived to be life threatening or above their tolerance limit [3,13,14]. Therefore, patients who perceive back pain as harmless delay reporting for treatment until primary back pain progresses to secondary one producing symptoms that are beyond their understanding. It is this poorly understood secondary symptoms that become (s) their primary complaint to the unsuspecting physician leading to misdiagnosis, wrong therapy and later OS [4,5].

Our observation indicates that this condition is rare as only one percent of the total referred patients were affected. However, it should be noted that some of the affected patients may not be referred and they drop out of the orthodox setting into the waiting hands of traditional healers and prayer warriors thereby moving from pillar to post.

The finding here that OS has a predilection for females (74%) and people with family history of back pain (66%)

reinforces the fact that sociocultural habit influences care seeking behavior since women are largely poorer, predominantly dependent and tend to endure more hardship (pain) than men in developing countries [12]. Besides, family history of back pain implies that the symptom is not new to the patient. These observations are supported by our earlier finding that back pain sufferers of low-medium socioeconomic status report for treatment late due to factors that respond to socioeconomic dynamics. Socioeconomic dynamics in this context is influenced by the number and types of life-stressing events, reflecting the psychosocial context in which the initial back pain occurred. Therefore, OS appears to affect people of low-medium socioeconomic status who having experienced high number of life-stressing events focus more attention on socioeconomic, financial and emotional problems than on back pain affecting their ability to accurately report the source and onset of their symptoms.

VOP therapy was effectively used to correct the SD driving the group of specific signs and symptoms manifesting in other parts of the body signaling the existence of SD reported in this study. However, it should be noted that accurate mechanical diagnosis is of essence and further work will be needed to ascertain the efficacy of other manual therapy techniques in this condition. This study reveals that the longer the duration of OS (and probably the older the patient), the longer the duration and number of treatment. How VOP achieves results have been partly explained [15-17]. VOP plays-up the neuro-inhibitory

mechanisms and facilitates the release of opioid peptides to achieve its therapeutic efficacy in youths. In elders, however, the efficacy of VOP may be hinged on overcoming degenerative restrictions and/or mal-ailments to desensitize irritant focus in the painful spinal segment, in addition to the modulator effects of opioid peptides, neuro-inhibition and probably stress induced analgesia without prejudice to the influence of skill on effective therapy. Nevertheless, the accuracy of recording keeping may not be entirely guaranteed by the authors which is a limitation of this study.

### Conclusion

One percent of patients with SD misdiagnosed to have systemic diseases due to misleading symptoms are finally referred for physiotherapy of manifesting symptoms. Manual therapy to the appropriate vertebro-geographic region(s) relieves the symptom (s) without prejudice to existing diagnosis.

### Competing interests

The authors declare no competing interests.

### References

1. Vindigni D, Griffend, Perkins J, Da Costa C, Parkinson L. Prevalence of musculoskeletal conditions, associated pain and disability and the barriers to managing these conditions in a rural, Australian Aboriginal Community. *Rural Remote Health* 2004;4(3):230.
2. Field HL. *Core curriculum for professional education in pain*. Seattle: IASP Press; 1997.
3. Egwu MO, Nwuga VCB. Relationship between low back pain and life-stressing events among Nigerian and Cauca-



- sian patients. *Physiother* 2008;94:133-40.
4. Michael JL, David ML, Malinh DH, Brooke RJ Jr, Robert EM, Dourglas SK. Suspected acute appendicitis: non-enhanced helical CT in 300 consecutive patients. *Radiol* 1999;213:341-6.
  5. Dyck VC. The enigma of referred abdominal pain in chiropractic practice: literature review and case report. *J Manip Physiol Ther* 1981;4:11-4.
  6. Procter P. Cambridge international dictionary of English. 2nd ed. Baltimore: Cambridge University Press; 1996.
  7. Lamb DW. The neurology of spinal pain. *Phys Ther* 1979; 59:971-3.
  8. Egwu M.O, Alabi M, Nwuga VCB. Effect of vertical oscillatory pressure on neck pain and some cardiovascular variables. *Physiother* 2003;89:666-74.
  9. Merskey H, Bogduk N. Classification of chronic pain. Seattle: IASP Press; 1994.
  10. Mathers LH. The peripheral nervous system. California: Addison-Wesley Publishing Company; 1985.
  11. Romanes GJ. Cunningham's text book of anatomy. 15th ed. California: Oxford University Press; 1990.
  12. Onyejeme BO, Onyeneke EC, Erigymremu GE. The effect of social and cultural variables on the treatment of pain in Eastern part of Nigeria - epidemiological study. 10th World Congress on Pain: California; 2002. Zola IK. Pathways to the doctor - from person to patient. *Soc Sci Med* 1973;7:677-89.
  13. Fordyce WE. Back pain in work place: management of disability in non-specific conditions. Seattle: IASP press; 1995.
  14. Nwuga VCB. Manipulation of the spine. Baltimore: Williams and Wilkins Publishers; 1976.
  15. Maitland GD. Vertebral manipulation. 5th ed. Boston: Butterworth-Heinemann; 2003.
  16. Egwu MO, Adewale AO, Olaogun MOB. The effect of vertical oscillatory pressure on youth and elderly adult low back pain intensity and lumbo-sacral mobility. *J Jpn Phys Ther Assoc* 2007; 10:17-26.

## . COCHRANE UPDATES & NICE GUIDELINES .

### DRUG USE DISORDERS

This quality standard defines clinical best practice within this topic area. It provides specific, concise quality statements, measures and audience descriptors to provide the public, health and social care professionals, commissioners and service providers with definitions of high-quality care.

This quality standard covers the treatment of adults (18 years or over) who misuse opioids, cannabis, stimulants or other drugs in all settings in which care is received, in particular inpatient and specialist residential and community-based treatment settings. This includes related organisations such as prison services and the interface with other services, for example those provided by the voluntary sector.

(Source: NICE Quality Standards, QS23, November 2012; available at <http://guidance.nice.org.uk/QS23>)