

Spectrum of neurosurgical complications following medical tourism: challenges of patients without borders

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Abstract

Background and objectives: The cost of medical care and availability of resources (human and facilities) which differs from nation to nation are amongst others, factors driving medical tourism (MT) despite its potential drawbacks. The aim of the study was to analyse all patients that presented with neurosurgical complications following MT.

Methods: A single institution prospective study was carried out. Data which included patients' demographics, diagnosis, Glasgow coma scale score at admission, type of complication, and outcome were collected over a 3 year period and analysed.

Results: A total of 23 neurosurgical cases were seen during the study period with a median age of 42 years (17-70 years). India is the most common country visited by Nigerian patients. Nine patients died from various complications on arrival in Nigeria. There was no significant statistical difference between the outcome and patients clinical status prior to travel ($p=0.107$), country where the surgery was done ($p=0.776$), admission GCS in Nigeria ($p=0.169$), and redo surgery in Nigeria (0.181).

Conclusion: Government in different nations should have legislations to ensure that medical tourists' receive appropriate care abroad, proper follow-up care upon their return, and also promulgate laws to regulate quasi and organised MT agencies that are operating in a regulatory vacuum.

Keywords: Medical tourism, Morbidity, Mortality

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Introduction

The price tag on medical care and availability of resources (human and facilities) differs from nation to nation. These amongst others have been one of the dynamics driving medical tourism (MT) despite its potential drawback and perils.

Medical tourism involves patients leaving their home country to access non-emergent medical care, often surgery^{1,2}. It is generally portrayed as a potential solution to a wide range of clinical conditions encumbering the health care systems in patients' home countries; a

solution to dearth of facilities or skilful personnel, delay in surgical intervention, prohibitively expensive medical care and offering of treatment that may be illegitimate in a patients home country^{3,4}.

In times past, hospital facilities in high-income countries marketed health services usually to the global elite of other countries^{5,6}; neurosurgical cases being among the common diseases. However, in recent times, hospitals positioning themselves as leading medical tourism (MT) destinations are largely found within lower and middle income countries. In these hospitals, favourable exchange rates is presently giving them a competitive advantage especially among price-conscious international patients^{3,7}. Governments and private organizations in these countries are also helping in promoting the MT industry⁸.

The concept of MT is a rapidly developing phenomenon with policy implication for health systems. Growth in the popularity of MT has resulted in an of increase attention being given to it from researchers, policy-makers, and the media. Irrespective of the precise growth

rate, it is generally agreed that the MT industry is growing rapidly in many Asian and South American nations, and is poised for additional growth in countries with the necessary human and technical resources^{3,9}. The industry is a highly profitable source of hard currency for host countries and a net loss of capital to departure countries. Arguably though, this is perhaps one of the most prominent factors driving medical tourism (MT) despite its potential drawback and perils.

Worthy of note is that MT can be extremely dangerous with fatal consequences to the medical tourist. As we know, even the slightest neurosurgical gaffe can be fatal. There are several draw back associated with medical tourism that are not usually well thought-out. Health care regulation standard varies from nation to nation and quite a number do not have rigorous checks and balances on what medical professionals need to do to get certified and to keep practicing. Secondly, patients may get drawn in by the possibility of a low cost procedure but end up paying far more as the patient is yet to be properly clerked and investigated; they may even be managed by inappropriate medical personnel or have unsuitable surgical procedures. Besides, the patient sacrifices his or her familiarity, loss of continuity of professional care and probably loose significant if not all legal guarantees by going for health care beyond their border; it will be quite demanding if not mission impossible to seek damages in case of negligence or incompetence. In addition, the spread of infectious diseases across national borders remains a probable risk. Given its positive and negative effects on the health care systems of departure and destination countries, medical tourism is a highly significant and contested phenomenon².

Globally, there are limited data on clinical outcomes associated with MT especially in departure third world countries; and there is currently few data on the impact of MT on patients. In Nigeria, the MT industry is more or less quasi with various registered and unregistered agencies, and persons assisting patients to access non-emergent and even emergent medical care abroad. This has since taken a quantum leap in re-

cent years in the country. A lack of reliable data about MT makes it difficult to create health system policy, and public health responses to address the associated risks and shortcomings, such as spread of infectious diseases, amongst others, associated with this industry. Yet, there has been little effort to systematically synthesize what is known about the effects of this phenomenon. The aim of our study is to analyse all patients that presented with neurosurgical complications following MT.

Patients and method

The series consisted of a prospective study of all patients that presented at our centre after having surgery at an outside facility outside our national boundary. The data was collected over a 3 year period, January 2011 to December 2013.

A detailed clinical history and physical examination was done in all the cases. Cranial and or spinal computed tomographic scan with a cranial/spinal magnetic resonance imaging was done in all the index patients with additional investigations as required. The data documented included patients demographics, clinical status prior to travel for surgery abroad (emergent or non-emergent), diagnosis (prior to travelling and on presenting to us), region of the body involved (Cranial or spinal), country where procedure was done, medical report from MT centre, Glasgow coma scale (GCS) score on admission, and outcome (dead or alive). Complications were characterized as lethal (mortality), causing new permanent deficits (permanent morbidity), causing new transient deficits (transient morbidity). Analysis of the variables was by simple proportion and percentages. Fischer's exact test was used to determine the differences between group means. A probability (p) of less than 0.05 was considered statistically significant.

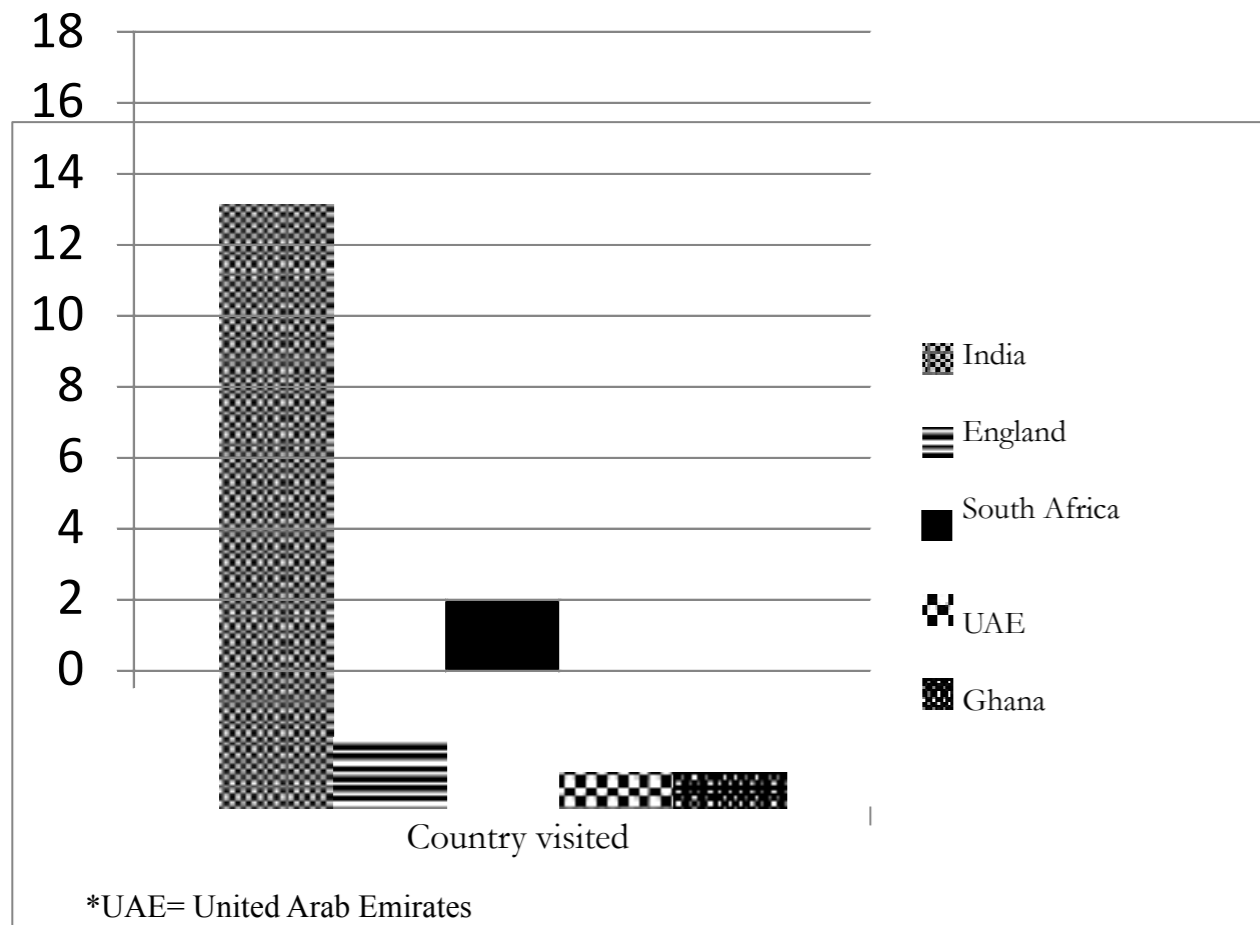
Results:

A total of 23 neurosurgical cases were seen during the study period. Of these cases, 13 were males. The median age was 42 years (17-70 years). The indication for MT was due to intracranial lesions in 10 patients (7 males, 3 females) and spinal diseases in 13 individuals (6 males, 7 females). The most visited country was India (17 cases, 73.9%) (Figure 1).

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Figure 1. Countries visited by the patients for medical tourism



All the patients travelled by air lasting at least 6 hours, except one patient that travelled by road to Ghana (7 hours journey). All the patients that travelled by air used commercial airlines even for that had emergent clinical

issues like complete cervical spine injury. The clinical status of the patient was emergent in 8 of the 23 patients. The GCS was 15 in 18 patients (78%) when they presented to us (Table 1).

Table 1: Summary of all patients

Nos	Sex	Age (years)	Diagnosis	MT Country	Pre-travelling status	GCS on presenting	Complication	Outcome
1	Female	68	Cervical/Lumbar canal stenosis	India	Nonemergent	15	Septicaemia from retained gauze	Died
2	Female	24	Traumatic Incomplete Cervical 6 myelopathy	India	Emergent	7	Septicaemia from grossly infected previous groin central line	Died
3	Female	42	Lumbar canal stenosis	South Africa	Nonemergent	15	Deep surgical site infection	TM
4	Female	54	Traumatic Incomplete Cervical 6 myelopathy	India	Emergent	15	Deep surgical site infection	TM
5	Male	51	Cervical/Lumbar canal stenosis	India	Nonemergent	15	Wrong level surgery	TM
6	Female	70	Cervical/Lumbar canal stenosis	India	Nonemergent	15	Wrong level/wheel chair bound	PM
7	Male	30	Traumatic Complete Cervical 5 myelopathy	South Africa	Emergent	8	Ventilator dependent	Died
8	Female	17	Traumatic Incomplete Cervical 5 myelopathy	India	Emergent	15	Non-reduction of subluxation	TM
9	Female	38	Thoracic aneurysmal bone cyst	India	Nonemergent	15	Biopsy done	PM
10	Male	54	Lumbar canal stenosis	UAE	Nonemergent	15	Deep surgical site infection	TM
11	Male	19	Traumatic Complete Cervical 5 myelopathy	India	Emergent	15	Stem cell failure	TM
12	Male	48	Conus medullaris tumour	Ghana	Nonemergent	15	Pulmonary embolism	Died
13	Male	41	Traumatic Complete Cervical 5 myelopathy	India	Emergent	8	Pulmonary embolism	Died
14	Female	32	Left intraventricular meningioma	India	Nonemergent	15	Seizures	TM
15	Male	45	Sphenoid ridge meningioma	India	Nonemergent	15	Subtotal resection with mass	TM
16	Male	18	Vein of Galen aneurysm	India	Nonemergent	15	Inadequate embolization	TM
17	Male	65	Olfactory groove meningioma	India	Nonemergent	8	Incomplete surgery due to li	PM
18	Male	70	Nonfunctional Pituitary adenoma	India	Nonemergent	15	Pulmonary embolism	Died
19	Female	22	Acromegaly	England	Nonemergent	15	Inadequate surgery	TM
20	Male	28	Frontal oligodendroglioma	India	Nonemergent	15	Seizures	TM
21	Male	65	Glioblastoma multiformes	India	Emergent	15	Status epilepticus	Died
22	Male	42	Olfactory groove meningioma	England	Nonemergent	14	CSF leak/seizure/death	Died
23	Female	18	Posterior fossa medulloblastoma	India	Emergent	15	Ventriculoperitoneal shunt sepsis	Died

*GCS- Glasgow coma score, PM- Permanent new morbidity, TM- Temporary new morbidity

Two patients had wrong level surgery and the most common complication was infection (6 patients, 26%). Nine patients died from their complication after re-presenting in Nigeria (Table 2), a third of which was accounted for by septicaemia.

There was no significant statistical difference between the outcome and gender, region of lesion, patients clinical status prior to travel (need emergent or nonemergent intervention) (Table 2), country where the surgery was done ($p=0.776$), admission GCS in Nigeria ($p=0.169$), and redo surgery ($p=0.181$).

Table 2. Outcome of patients related to gender, region of surgery and pre-operative clinical status of patients

	Died	Permanent deficit	Transient deficit	p-value
Gender				
Male	6	1	6	0.589
Female	3	2	5	
Pre-operative status				
Emergent	5	0	3	0.107
Non-emergent	4	3	8	
Location of lesion				
Intracranial	4	1	5	0.928
Spinal	5	2	6	

Discussion

Medical tourism has been in practice since the 18th and 19th centuries, when people travelled to spas to “take the waters” as a means of improving their health; likewise people in remote settlements and less developed countries, have always travelled to reach clinics or physicians for aid^{10,11}. However in the last two decades, there have been an extensive denationalization and marketization of health care globally (developing and in developed countries)⁹.

The fact that people are able and willing to travel long distances, even to developing nations, for cheaper-cost health care suggests that health care in the developed countries has become too expensive or too inaccessible for many people¹⁰⁻¹². Third world countries commonly visited by patients for health care include India, Malaysia, Singapore, and Thailand. In Nigeria, India is the leading country that patients travel to for medical procedures. Almost three-quarters of our patients in this study had visited India.

Medical tourists are at risk for hospital infection, acquired and nosocomial¹³. These pathogens which they may import to their country may be rare and it may even be a multidrug resistant strain. The most common reason for presenting to our facility was infection (26%). A third of the 9 patients that died had septicaemia.

In study from the United Kingdom (UK), it was noted that the UK is a clear net exporter of medical travellers. In 2010, an estimated 63,000 UK residents travelled for treatment, while around 52,000 patients sought treatment in the UK¹⁴. However in Nigeria, there is no reliable data on patient numbers, flows, treatment types and success rates. Success rates are generally reported by some patients, relations, news media and quasi agencies without an independent auditor or the inclusion of long-term success rates after medical tourists return to their home countries. These success rates are at best notional. In addition, a lack of dependable data about MT makes it difficult to create policy to improve patient safety measures or guide the development of the industry in an equitable and ethical manner, to improve our local health system, and publicize public health responses to address the associated risks and shortcomings associated with this industry (e.g. spread of infectious diseases).

Two of our patients had wrong level surgery while one had retained gauze that led to septicaemia from which she died from. None of this patient could have a legal redress. In the literature there is no substantial proof to suggest negligent issues amongst MT brokerages. Despite this, the obvious regulatory vacuums around MT services leaves room for hazardous medical and business practices; hence the need to proactively manage MT. At present MT should be viewed as an unbalanced trade practice.

Despite the rapid expansion of the MT industry, few standards exist to ensure that these businesses organize high-quality, competent international health care. In Nigeria, many quasi MT companies are now involved in organizing cross-border health services. Most of these personnel are not trained nor are they familiar with applicable statute, case law and professional standards in the countries where health services are offered. There are no regulatory criteria intended to protect the health and financial interests of patients.

Although this study did not find any statistically significant association between patients' outcome and country visited for treatment. Nigeria and other developing countries have the obligation to implement public policies to moderate the demand for MT by their populaces. A call for a comprehensive public health response to MT and its effects should be coupled with a clear understanding that medical tourism is a highly diverse practice.

There is need for research to produce dependable understandings about the scope and volume of the practice of MT in a way that is comparable across facilities and countries. This may also offer insights into important differences between medical tourists based on demographic factors, patients' health status, etc.

Since there is an increasing numbers of patients travelling in search of medical care beyond their national boundaries despite its associated risks, Government ministries in all nations from which patients depart for care abroad should have legislations to ensure that medical tourists' receive appropriate care abroad, proper follow-up care upon their return, and promulgate laws to help in regulating most of the quasi and organised MT agencies that are operating in a regulatory vacuum.

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