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Ageing and care related issues: a focus on India

Nilamadhab Kar

Abstract

Ageing is a process and it does not start at a particular chronological age. Although most people enjoy this period of life, many still face multiple challenges related to ill health, disabilities and care related issues. Multimorbidity is common in this age group, and the need for routine and emergency health care is more frequent. There are concerns related to availability, access and affordability of quality care for the elderly. Considering the proportion of older adults in India, the magnitude of the care needs is extremely high. Despite the general progress of health infrastructure, policies and legal framework, specific support and care for the elderly are still at an alarmingly low level. Specifically, it is the care and support at the individual level which requires more attention. While personal planning and preparation for old age is essential, multilevel support systems should be available and be more robust. These should be able to cater to person-specific needs and care fairly at different socioeconomic strata.

Key words

Aged, Care, India, Morbidity,

Introduction

Ageing is as much a mental as a physical phenomenon; it can be more easily understood as a functional one. It becomes more apparent when one starts having an age-related health issue, disability, or functional impairment, when one starts depending upon others for activities that one was able to do themselves. It does not start at a specific age. The process and meaning of ageing are different for each individual, for some it could be perceived as faster and for others, slower. It certainly does not start at retirement, but that is a significant life event which suggests a change in scenario or perspective of life.

One of the striking features for many older adults is their restricted repertoire of activities in their day to day life, which are mostly repetitive. Besides lack of any specific work, or leisure activities, there may be illness-related restrictions. However, in many it could be due to a lack of planning regarding the engagements and activities after their working life or retirement from usual work. Most are so incarcerated into their work, that there is a void after retirement, and many are not prepared for what to do next. While some older adults remain engaged in a range of activities, large proportions do not.

In general, older adults are happy with family, children and grandchildren; and are satisfied with the activities or work they are engaged in. But many do have worries, regarding illness, bereavement and other stressful events, or loneliness.^{1,2} There is the issue of getting appropriate care in old age; despite most elderly live with their family; and a few live alone or only with their spouses.

Realities

Health related concerns, multimorbidity and frailty in old age cannot be overemphasised.^{3,4} Besides physical illnesses, there is great burden of mental illnesses which are often not recognised. The 75th National Sample Survey in India highlighted that around 6.6% of women and 1.6% men live alone, 27.5% are immobile at the age 80 years and above, 50% of men and 90% of women are financially dependent on others and only 18.9% have health insurance.⁵ There was a great rural urban divide with massive disparity in the situations of elderly in villages, towns and cities. These highlight some of the care needs and their magnitude.

Challenges

There cannot be easy straight forward solutions. As each individual's situation is unique and one size does not fit everybody, one regimen will not work for all. There needs to be a preparation for ageing healthily, gracefully, and as far as possible, living a life independently on one's own accord. The process should start early; one of the preparations does start early, with the contribution to pensions, which helps financial independence, but beyond that many do not think or prepare for it, until it is much later.

It is still difficult to get appropriate health care for elderly in the villages of India, one needs to travel long distances for clinical care; caregivers need to take leave from work, and a clinic visit for even minor ailments takes almost a day to be sorted. While towns and cities have easy access to health care, these may not be specific to older adults; geriatric clinics and facilities are mostly at tertiary level.

Health screening of the elderly is grossly inadequate in India.⁶ Often common diagnoses are missed: even hypertension, diabetes, more so in people living in villages. There are no scope for regular check-ups or screening for specific illnesses, e.g. cervical cancer, etc. Mental illnesses, including depressions are hardly diagnosed. Often memory impairments are considered age related, so mild cognitive impairments and dementia are missed.

Managing health emergencies for elderly and access to the available facilities are other concerns in India. While emergencies are common in older years, there are uncertainties about whom to contact, how long the supportive personnel will take to arrive, how equipped they would be to deal with the emergency, and their training in emergency medical care.

A linked concern is the cost of care whether for acute emergencies or routine medical care, both in a government hospital and a private set up. There is a great disparity of quality and cost of available medical care in India. While health care issues are more frequent in older adults, cost is a real limiting factor for many seeking medical help. There is an emerging issue of the cost of unnecessary investigations; Indirect costs associated with healthcare are becoming a dissuading factor as well.

It is alarming that there is wide spread elder abuse reported from India.⁷ A large proportion of elderly report abuse anonymously in studies and sometimes in confidence during clinical reviews; however in reality, most of these concerns remain unreported. Abuse is done often by the family members and informal caregivers; however it is also common in old age homes.

Recently old age homes in India are mushrooming. Although most of the older adults do not like to live in old age homes, they are often left with no choice. In most cases, older adults live there due to their difficult life circumstances. Most old age homes have inadequate support and are poor in quality; sometimes older people live in dormitory, sharing bathroom, with very limited privacy. Well maintained old age homes come with a high cost, which most people cannot afford. It is common to observe that these old age homes are not monitored and there is no quality control.

A large number of voluntary organisations work for elderly in India at national and regional levels. However, finding one locally which can address the individual needs and concerns of older adults or their caregivers is often difficult. These are almost non-existent in villages.

There are many policies and laws for elderly in India, e.g. National Programme for the Health Care for the Elderly, 2015;⁸ Maintenance and Welfare of Parents and Senior Citizens Act, 2007; Indira Gandhi National Old Age Pension Scheme under the National Social Assistance Programme 2007; National Policy for Older People, 1999; etc. Fast-track support systems from the police have been set up in many places. However, it is reported that the suggestions, concerns or complaints are not heeded; there is inadequate trust and too much interference in the process. As a consequence, many older adults feel helpless and lonely in managing their day to day issues. It appears that the current system has not been effective to deal with the challenges.

Conclusion

The ground realities related to care of elderly in India are still challenging. The process of getting appropriate care

in almost all areas is often hurdled. There is a lot to reflect and do about improving the care for elderly in India to provide a dignified living. Multilevel planning and support is essential; including that from the family. Individual specific preparation for old age, to maintain physical and mental health, preventing or managing illnesses or age related disabilities effectively and engaging in satisfying activities should also be in focus.

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Short Review

Management of urinary incontinence in older adults with dementia

Oluwafemi Thomas Alonge, Natalie McNeela

Abstract

Urinary incontinence (UI) is more common in older adults living with dementia than in those without dementia. Prevalence of UI is also higher in institutionalised (living in care homes) older adults with dementia than in those living at home. It is a significant cause of morbidity, prolonged hospital stay, increased risk of institutionalisation, and high financial burden. There are multiple causes of UI in older adults with dementia including reversible and established causes. There should be thorough history, physical examination, and appropriate investigations to determine the cause of UI for individual person. Multidisciplinary team approach is useful in providing holistic care and shared decision making.

Key words

Dementia, Management, Older Adults, Urinary Incontinence

Introduction

The number of older adults globally, especially in developed countries such as the United Kingdom, continues to rise with increasing life expectancy.¹ This increasing ageing population also results in higher number of older adults living with dementia and prevalence rises with advancing age. Worldwide, there were over 55 million people with dementia in 2020 and this number is predicted to double every 20 years, reaching 78 million by 2030.² In the UK, there are around 900,000 people with dementia and this number is projected to increase to more than 1 million by 2025 and almost 1.6 million by 2040.³ Alzheimer's disease (AD) is the commonest cause of dementia in older adults.⁴ Other common causes of dementia in older adults include vascular dementia, mixed dementia, dementia with Lewy bodies (DLB) and Parkinson's disease dementia. Frontotemporal dementia is a rarer cause but more common in younger patients.⁵

Urinary Incontinence (UI) is defined by the International Continence Society as "a complaint of an involuntary leakage of urine."⁶ UI is more common in older adults with dementia than in those without dementia, and its prevalence rises with increasing age.⁴ This results in significant morbidity, increased rate of

institutionalisation, pressure ulcers, falls, fractures, increased risk of infections, stress on families and carers, and huge financial burden.⁴

In this article, we review the common causes of urinary incontinence in older adults living with dementia and approaches to clinical evaluation and management. Relevant recent literature for this review was collected using electronic databases, mainly PubMed and Google Scholar.

Prevalence

UI is more common in older adults living with dementia than in those without dementia with estimated prevalence ranging from 11% to 93%.^{4,7-9} In one Swedish study, institutionalised older adults with dementia have a higher prevalence of UI (78%) than those at home (37%).¹⁰

Micturition and ageing lower urinary tract

The normal bladder micturition cycle consists of storage and voiding phases. These phases are typically controlled via signals between the lower urinary tract (bladder and urethra) and the brain (frontal cortex, basal ganglia, and pontine micturition centre). The lower urinary tract is controlled by both autonomic (sympathetic and parasympathetic) and somatic nervous systems. The sympathetic (hypogastric) nerve is derived from T11 – L2 while parasympathetic (pelvic) nerve and somatic (pudendal) nerve are derived from S2 – S4. In the storage phase, the sympathetic system inhibits bladder contraction through β -adrenergic receptors and promotes urethral sphincter contraction. The basal ganglia and frontal cortex inhibit parasympathetic activation, leading to relaxation of the detrusor muscle and passive filling of the bladder. During the voiding phase the parasympathetic nerve stimulates the bladder through activation of M3 receptors, resulting in contraction of detrusor muscle and relaxation of urethral sphincters.^{11,12}

With increasing ageing, there are certain changes within the lower urinary tract which increase the risk of UI in older adults. These changes include reduction in bladder capacity, reduced sensation of bladder fullness, increased uninhibited contractions, reduced flow, decrease ability to postpone voiding, and increased postvoid residual urine volume.¹³ Other changes include prostatic enlargement in men¹⁴ and pelvic floor weakness and prolapse of pelvic organs in older women.¹⁵

Aetiology

There are various causes of UI in older adults living with dementia. Some of these causes are reversible or functional and are not related to abnormalities within the lower urinary tract. Others such as detrusor overactivity, stress incontinence, bladder outlet obstruction, and detrusor underactivity, are related to problems within the lower urinary tract. These are referred to as established causes.

Reversible causes

These are transient and largely reversible causes of UI, usually not related to lower urinary tract, and can be recalled from the mnemonic DIAPPERS.¹⁶ They include **D**elirium, **I**nfection (UTI), **A**trophic vaginitis, **P**harmacological, **P**sychological (severe depression), **E**xcessive urine output, **R**estricted mobility, and **S**tool impaction (constipation). Delirium is common in older adults and those with dementia. All causes of delirium such as pain, infection, malnutrition, dehydration, constipation, hypoxia, electrolyte derangement, and environmental issues can lead to UI.¹⁶ Older adults with urinary tract infection can present with UI.¹⁶ Some of these older adults with dementia often present with recurrent urinary tract infections. Antibiotic prophylaxis may reduce recurrent UTIs in older adults but there is a need for further insights into understanding optimal antibiotic duration, recurrence rate on cessation of prophylaxis, adverse effects of long-term treatment, and effect on antibiotic resistance.¹⁷⁻¹⁹ Pharmacological agents including diuretics, anticholinergics, antipsychotics, antidepressants, anti-parkinsonian, sedative/hypnotics, opioids, calcium channel blockers (CCB), angiotension converting enzyme inhibitors (ACEI), and alcohol can all lead to UI.¹⁶ Excess fluid intake, diabetes insipidus, diuretics, peripheral oedema can result in excessive urinary output and urinary incontinence. Other important causes of UI are atrophic vaginitis, severe depression, and poor mobility.¹⁶

Functional urinary incontinence

In functional incontinence, there are no abnormalities within the urinary tract or micturition pathway. In older adults with dementia, functional UI could result from progressive cognitive problem where they do not recognise the need to pass urine, thereby leading to incontinence. They may also have behavioural and communication difficulties, problem with mobility, problem with recognising toilet, and difficulty with dexterity.¹⁶

Detrusor overactivity

This can be due to overactivity of the parasympathetic pathway or hypersensitivity to cholinergic agonists through muscarinic receptors (M2/M3) resulting in involuntary detrusor contraction.²⁰ It usually presents clinically as urgency incontinence. A subset of detrusor overactivity, called detrusor hyperactivity with impaired contractility (DHIC) causes impaired bladder emptying

and increased post void residual urine (PVRU).²¹ Some of the causes of detrusor overactivity include dementia, Parkinson's disease, multiple sclerosis, peripheral neuropathy, spinal cord injury, and stroke.¹² The mechanism of neurogenic urinary incontinence in AD suggests inhibition of micturition reflex via cortical cholinergic neurons. In patients with DLB, there is neurodegeneration in the nigrostriatal dopaminergic system resulting in disinhibition of the micturition reflex and detrusor overactivity.⁷

Stress incontinence

This results from activities that lead to raised intra-abdominal pressure such as coughing, sneezing, or lifting heavy objects. This is more common among elderly women due to pelvic floor weakness, and less commonly in men following prostatectomy.²²

Bladder outlet obstruction

This is more common in older men than women. Causes could include benign prostatic hypertrophy (BPH), bladder neck surgery, or spinal cord injury.¹⁶

Detrusor underactivity

This occurs because of reduced bladder contraction resulting in incomplete bladder emptying, urinary retention, and increased residual volume. It can be due to neurogenic failure, myogenic failure, or medication side effects. Some of the causes include diabetes, bladder outlet obstruction, ageing, stroke, Parkinson's disease, dementia, multiple sclerosis, CNS infection, spinal cord injury, pelvic surgery, and fractures.²³

Clinical evaluation

A detailed history and physical examination will help in elucidating the most likely cause(s) of UI in older adults with dementia presenting with UI. A bladder diary for a minimum of 3 days is useful in the initial assessment of UI. The mnemonic DIAPPERS will help in identifying common and reversible causes of UI. Physical examination should include digital rectal examination to exclude constipation or faecal impaction, and prostate enlargement.^{24,25} Post void residual volume should be assessed by bladder scan.²⁴ It will be useful to assess factors such as cognitive, behavioural, or mobility problems which might be contributing to functional incontinence. Useful investigations may include routine blood tests and urine analysis to exclude infection. Urodynamic studies in older adults with dementia can be considered in those with established UI only if non-surgical treatment options have been unsuccessful and test results will have direct influence or benefit on management.²⁵

Management

Non-pharmacological management

These are outlined in Table 1. Lifestyle modifications are first line and should be offered for older adults with

cognitive impairment. These include reduced caffeine intake, modification of fluid intake, and weight loss for those living with obesity.²⁴ Behavioural modifications such as prompted voiding, timed voiding, and bladder training are useful in reducing UI in older adults with dementia. However, certain behavioural interventions are more effective than others depending on individual's cognitive and physical functions. In prompted voiding, they are asked of the need for voiding at regular intervals and are offered assistance for voiding. Timed voiding and bladder training are more suitable for older adults with dementia and reasonably good cognitive and physical functions. Timed voiding requires voiding at scheduled intervals to avoid UI.⁷

Pelvic floor muscle training is useful in those with mild cognitive impairment and stress incontinence secondary to pelvic floor weakness.²⁶ Pelvic floor training could be considered for older adults with more severe dementia, but the effect is likely to be less.

Urinary catheterisation can be considered in detrusor underactivity with urinary retention, especially in those with acute urinary retention and to provide relief in those pelvic skin wounds and pressure ulcer.²⁴ However, urinary catheterisation (intermittent or in-dwelling) can be problematic in older adults with dementia due to their cognition and this should be avoided as much as possible to avoid risk of urinary tract infections.²⁵

Table 1: Non-pharmacological management of UI

Lifestyle modifications	Reduction of caffeine intake Modification of fluid intake Advice on weight loss for people who are obese
Behavioural modifications	Prompted voiding by carers Timed voiding Bladder training for urgency or mixed UI
Physical therapies	Pelvic floor muscle training for stress or mixed UI
Urinary catheterisation	In detrusor underactivity

Pharmacological management

Medications are indicated for identified reversible problems. Older adults living with dementia should be treated the same as those without dementia but with added awareness of side effects and polypharmacy.

When treating reversible conditions, it is essential to 'treat the cause'. These may include laxatives for constipation, oestrogen cream or pessary for atrophic vaginitis, or antibiotics for urinary tract infections.²⁵

Drug treatment is also indicated in patients with urgency UI (Table 2). Anticholinergic drugs such as oxybutynin, tolterodine, fesoterodine, solifenacin, darifenacin, trospium, and propiverine, are used for urgency UI.²⁴ Anticholinergics competitively inhibit acetylcholine

binding to muscarinic receptors resulting in reduced detrusor muscle contraction during storage phase and improvement in UI.⁷ However, these drugs are particularly problematic in older adults with dementia due to their anticholinergic side effects such as delirium, hallucinations, constipation, and urinary retention. Many of these older adults with dementia also have multiple co-morbidities and are often on other multiple medications which increase anticholinergic burden, thereby worsening urinary incontinence.²⁷ Mirabegron is an option in such older adults with dementia.²⁸ Mirabegron is a beta-3-adrenergic receptor agonist and works by activating beta-3-adrenergic receptors in the detrusor muscle leading to bladder relaxation and enhancement of bladder capacity and filling.²⁸ Mirabegron is associated with risk of severe hypertension. It is contraindicated in people with severe uncontrolled hypertension (systolic blood pressure ≥ 180 mm Hg and/or diastolic blood pressure ≥ 110 mm Hg).²⁹

Drugs used in BPH are alpha-blockers such as tamsulosin, doxazosin, alfuzosin, terazosin, prazosin, and 5-alpha-reductase inhibitors such as finasteride and dutasteride. Alpha-blockers used in BPH are selective alpha-1 antagonists, causing relaxation of prostate gland smooth muscle. Alpha-blockers increase the risk of orthostatic hypotension, syncope, and falls.³⁰ 5-alpha-reductase inhibitors antagonise 5-alpha reductase, an enzyme responsible for conversion of testosterone into dihydrotestosterone (DHT) in the prostate gland, resulting in decreased prostate gland size.³⁰

Surgery

Invasive and surgical options exist for managing UI. However, many of these treatment options may not be suitable in older adults living with dementia depending on the severity of their illness, other co-morbidities, and frailty. If treating invasively or surgically, options for detrusor overactivity in patients where drug treatments have been unsuccessful include botulinum toxin A injection, percutaneous sacral nerve stimulation, augmentation cystoplasty, and urinary diversion.²⁴ In older women with stress urinary incontinence, options include open or laparoscopic colposuspension, autologous rectus fascial sling, mid-urethral mesh sling, and injection of intramural bulking agents.²⁴

A multidisciplinary team approach to managing incontinence is very useful in arriving at a shared decision making in the management of UI.³¹ This can be seen in practice in continence clinics where diverse disciplines of healthcare professionals are represented in management and decision-making process.³² This could include involvement of geriatrician, urological surgeon, urogynaecologist, nurse, physiotherapist, and occupational physiotherapist.³²

Prior to considering surgical options, a Mental Capacity Assessment is recommended along with a discussion with the person and their family. Invasive treatment should only be offered if the benefits outweigh the risks, and an individual judgement should be made in each case.

Table 2: Drugs used in urgency UI and BPH

Condition	Class	Mechanism of action	Drugs	Notes
Urgency UI	Anticholinergics	Competitive inhibitors of acetylcholine binding to muscarinic receptors	Oxybutynin Tolterodine Fesoterodine Solifenacin Darifenacin Trospium Propiverine	Side effects limit their use
	Beta-3-adrenergic receptor agonist	Activates beta-3-adrenergic receptors in detrusor muscle	Mirabegron	Avoid anticholinergic side effects
Benign prostatic hypertrophy	Alpha blockers	Selective alpha-1 antagonists	Tamsulosin Doxazosin Alfuzosin Terazosin Prazosin	Risk of orthostatic hypotension, syncope, and falls
	5-alpha-reductase inhibitors	Inhibit conversion of testosterone into DHT	Finasteride Dutasteride	

Prognosis of UI varies among different older adults with dementia depending on the causes of UI, severity of dementia, degree of frailty, and presence of other co-morbidities.

Conclusion

Urinary incontinence can be challenging to manage in older adults living with dementia due to reduced cognitive, functional, physical abilities, multiple co-morbidities, and polypharmacy. Management should be holistic, person-centred, and aim at identifying and treating the cause of UI to maintain independence and reasonable quality of life in these older adults.

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Short Review

Role of exercise in older adults

Tejaswini Sahoo

Abstract

Maintaining good health in old age is a goal, a necessity and a challenge. This article describes the role of exercise in elderly to support healthy ageing and living. Healthy ageing is a process of developing and maintaining the functional ability that enables wellbeing in old adults. Exercise in older adults comes with various health benefits, e.g., preventing or delaying the occurrence of many chronic illnesses, decreasing the risk of falls, faster recovery from the illnesses and enhanced social participation. Exercise also improves mental health. Many age-appropriate exercise methods are available and older adults can choose the ones they are comfortable with to remain physically active.

Key words

Ageing, Elderly, Exercise, Individualized, Treatment

Introduction

According to the World Health Organization, health refers to “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. Maintaining health in old age often appears to be a challenge; but it is an essential goal. Ageing is an unavoidable natural phenomenon, but it comes with many opportunities and possibilities. Older people are a valuable resource for any society with their experience and contributions.

The proportion of Indian elderly population is growing as it is happening worldwide. According to Census 2011, India has 104 million older people (60+years), constituting 8.6% of total population;¹ this is estimated to rise to 19.5% by 2050.² This highlights the magnitude of care and support needed to keep the ageing population healthy.

Regular physical activity is the most effective behavioral strategy for increasing health span and promoting healthy ageing.³ Being physically active throughout life is considered a protective factor against many chronic diseases and age-related loss of function.⁴ Interestingly compared to global estimates, Indians are found to be more sedentary and less active physically.⁵

Inactivity is associated with alterations in body composition resulting in an increase in percentage of body

fat and a concomitant decline in lean body mass. Thus, significant loss in maximal force production takes place with inactivity. Skeletal muscle atrophy is often considered a hallmark of ageing and physical inactivity.⁶ Improvements in mental health, emotional, psychological, and social well-being and cognitive function are also associated with regular physical activity. Despite these health benefits, physical activity levels amongst older adults remain below the recommended 150 minutes per week.⁷

Effects of exercise on ageing

Exercise intervention is effective in reducing the risk of fall in older adults. Integrated training (resistance training, core training, and balance training) with duration of over 32 weeks and a frequency of more than five times a week is more effective in reducing the risk of fall in older adults. It is a long-term and continuous method to reduce the risk of falls of the elderly through exercise.⁸

Moreover, physical activity can have physiologic effects, such as changes in endorphin and monoamine levels or a decrease in the level of the stress hormone cortisol, which can improve mood.⁹ Physical exercise of moderate intensity, combined with aerobic and resistance training, could be appropriate for decreasing depressive symptoms in older adults.¹⁰

The importance of friends as sources of support for leisure time physical activity in older adults should be emphasized. People should be encouraged to exercise with a partner, which improves motivation, helps in social connectivity and is often helpful in maintaining exercise, which has been a successful strategy in the general population and in older adults.¹¹

Physical activity during ageing acts by promoting the activity of the immune system, including T and B lymphocytes.¹² Staying physically active during social restriction is essential in promoting health and preventing future chronic conditions resulting from a sedentary lifestyle. It is also essential to reduce the sedentary lifestyle and accumulate at least 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous-intensity physical activity per week is mandatory.¹³

Overall, routine physical activity has been shown to improve body composition (e.g., through reduced abdominal adiposity and improved weight control), enhance lipid profiles (e.g., through reduced triglyceride

levels, and increased high-density lipoprotein (HDL) cholesterol levels), improve glucose homeostasis and insulin sensitivity, reduce blood pressure, improve autonomic tone, reduce systemic inflammation; decrease blood coagulation, improve coronary blood flow, augment cardiac function and enhance endothelial function.¹⁴

Recommendation of exercise for older adults

Exercise is a subcategory of physical activity that is planned, structured, and repetitive, in which bodily movements are performed with or without the explicit intent of improving or maintaining of one or more components of physical fitness (i.e., aerobic capacity, muscle strength power and endurance, balance, coordination, and flexibility).¹⁵

WHO has published specific guidelines in 2020 for people older than 65 and recommended that both aerobic exercise and strength training should be carried out. Adults and older adults (>65) should do at least 150–300 minutes of moderate-intensity aerobic physical activity, or at least 75–150 minutes of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate-intensity and vigorous-intensity activity throughout the week for substantial health benefits. Adults and older adults (>65) should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.¹⁶

Moderate stretching of tight structures is beneficial to improve flexibility. Stretching exercises are used extensively in the rehabilitation context wherein injury or disease may have resulted in a restricted range of motion specific to given joints, and the goal is to regain “normal” range of motion.¹⁷

There are various electrical modalities which are used for pain reduction e.g., transcutaneous electrical nerve stimulation (TENS), ultrasound, interferential therapy, etc. High repetition and low intensity exercises are recommended for improving endurance and balance; and both static and dynamic balance exercises are effective to prevent the falls. Breathing exercises, meditation, yoga, tai chi, relaxation exercises are mostly prescribed to improve concentration and breathing capability. A proper exercise protocol includes warm up and cool down exercises before and after the exercise and relaxation exercises at the end.

Activities of daily living like, taking the stairs instead of the elevator, standing on one leg while doing the dishes, or slowly standing and sitting without using of the arms represent ways of incorporating aerobic, balance, and strengthening exercises, respectively, into everyday activities.¹⁸ These can be facilitated according to the comfort and capabilities of the older adult.

An exercise prescription is a recommended physical activity program designed in a systematic and individualized manner in terms of Frequency, Intensity, Time, Type, Volume, and Progression, known as the

FITT-VP principle. The consensus is for older adults to participate in 30 minutes per day or more of moderate-intensity aerobic exercise for at least 3 to 5 days a week to total 150 minutes per week and to supplement with resistance, flexibility, and balance exercise training.¹⁹

It is more important to improve the quality of life of older individuals which is an essential parameter of healthy ageing. Regular flexibility and walking exercise was important to improve quality of life.²⁰ Remaining motivated for exercises could be a challenge sometimes. People who are happy may find it easier to remain motivated. Connecting with the people, being physically active, learning new skills, being kind, giving to others, helping or volunteering, and mindfulness of the present moment are the key source of happiness.²¹

Many older people will have physical morbidities leading to the restriction of movements and may experience limitations for range of exercises. For these people, physiotherapy can help to improve their physical fitness. One of the main goals of physical therapeutic procedures in the elderly is the restoration or maintenance of functional autonomy in daily living activities.²²

Conclusion

As age increases, physical and mental morbidities increase. Regular exercise can help manage many age-related health issues, and to remain fit by improving flexibility, strength, endurance, and balance. In specific circumstances and conditions physiotherapy with an individualized guided protocol is essential. Exercise as an effective intervention is used less frequently; and it needs to be promoted not only among the general public but also with professionals to include this as one of the suggested supportive measures.

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Continuing hurdles for psychiatry impact mental health care: a viewpoint

Bhumika Malik, Ritu Rani, Jagriti Yadav, Sujata Sethi

Abstract

Psychiatry is an established medical discipline with many expanding subspecialties, such as old age psychiatry, child psychiatry, addiction, forensic psychiatry and many more, providing evidence based mental health care for persons with mental illness. However it continues to face hurdles of various kinds from historical times to present day. This consequentially limits full realisation of its potential to help people with mental health problems. In addition to stigma, myths and misconceptions, the field of psychiatry is targeted across multiple fronts such as lack of scientific basis of psychiatric diagnosis, violation of human rights, bio-reductionism, over-prescription and political influence. However, the critiques of psychiatry overlook the progress it has made, understanding mental illnesses, their aetiologies and management. The criticisms of psychiatry need to be addressed, constructively with information and evidences that may lead to more productive outcomes related to perceptions around psychiatry. This article discusses some of the major criticisms with the factual underpinnings.

Key words

Aetiology, Criticism, Diagnosis, History, Psychiatry

Introduction

Psychiatry is probably one of the most complex and advancing branch of medicine which despite having limited tools at its disposal offers tremendous relief to individuals with psychological distress and impairment. However, there has been major polarisation of psychiatry towards negativity, thus blurring its positive aspects. There are understandable reasons for psychiatry being scrutinized way more than other medical specialties. Psychiatry exercises social control over the lives of individuals under its care to a degree exercised by no other specialty; it has to work across multiple disciplines and perspectives that are difficult to integrate; it has a tumultuous historical legacy and the state of scientific development is still comparatively rudimentary. Also, we see people who are dissatisfied with the services of psychiatry wanting to be heard to air their personal grievances and satisfied patients are a silent majority people who have little motivation to go public with their gratitude. So, we see more criticism than appreciation

which becomes a major impediment for mental health service delivery globally.¹ These criticisms have been levelled at different phases of evolution of psychiatry.

Criticism: The 'troubled search' for the basis of mental illness

Psychiatry is considered to be a discipline with too many schools which are of historical importance only and that these schools have been unable to establish a linear approach in psychiatric diagnosis and treatment, unlike other medical specialities. No doubt psychiatry is contributed by a blend of various schools of thoughts but each has got its own significance even when a single theory is not the theory of everything. For example, the Freudian Psychoanalytic approach is fundamental basis of numerous scientifically validated psychological treatments.² Similarly, Kraepelinian psychiatry has been basis of longitudinal and symptomatic perspective on nosology and continues to be fundamental for psychiatric diagnosis and will remain so until neurobiological disease categories replace it. None of the lessons of the major schools of psychiatry have been abandoned. The neurobiological psychiatry is part of larger whole and continues to evolve.

Criticism: Violation of human rights

The asylum movement has been strongly criticised for violation of rights of patients with mental illness.³ Psychiatrists since the beginning have been criticised for exercising control and power over their patients. However, the concept of power inequality doesn't seem to be correct, rather the relationship between psychiatrists and patients is a professional therapeutic alliance and it has nothing to do with power, inequality and control.¹

The emphasis of United Nations and World Health Organization on the 'right based approach' for mentally ill patients does not equate with failure of psychiatry as it has been misconstrued to be a step for preventing exploitation of mentally ill people at the hands of psychiatrists.⁴ It simply aims to empower mentally ill patients to be aware of their fundamental rights. Also, the asylum movement was not a failure as it has been quoted multiple times. Rather, at those times, it had been a sustained effort to provide humane care, unlike previous desperate and barbaric responses to severe mental illness. Although antipsychiatry movements suggest closure of

psychiatry hospitals, the “deinstitutionalization” did have some aftermath of premature discharge of in-patients to community care without effective psychopharmacological agents or adequate supportive structure, which ended up with many patients being homeless or in prison.⁵

Involuntary hospitalization is usually based on frequent or serious violation or threat of civil rights in the community, which is petitioned legally and sanctioned by law.⁶ While individual’s freedom and rights are respectful, it does not confirm impairing other’s civil liberties. Moreover, psychiatry is not always about confinement (admission) and controlling (treatment); it can be liberating as well. For example, to be proven guilty of committing a crime, the prosecution must prove beyond a reasonable doubt that the accused person not only committed a prohibited act but also had sound mind at the time of commission of crime.⁷

Criticism: Psychiatric diagnoses lack scientific basis

Next, a common criticism against the diagnostic systems in psychiatry states that “It is a product of unscrupulous politics and bureaucracy which uses expert consensus and not the scientific basis”.⁸ This is not a valid thought. Historically, the need for a homogenous classification system in psychiatry arose post world war II as the uncertainty surrounding the etiological basis of psychopathology, and psychiatrists’ contention that behavioural abnormalities are a result of dynamic interplay between internal and external factors, compelled formulation of a uniform nosological system of acknowledged clinical utility.⁹ However, diagnosis and classification of mental disorders has always been controversial.

Diagnostic and Statistical Manual (DSM) is a guide rather than a controlling force for psychiatric practices, just as International Classification of Diseases (ICD) for various medical specialties. Psychiatric diagnosis is a uniform organisation of signs and symptoms that facilitates an evidence-based practice. The diagnostic categories in the DSM are derived after the planning committees have extensively examined the existing literature regarding the epidemiology and pathophysiology of different psychopathological states with a descriptive approach.¹⁰ The Research Domain Criteria (RDoC) has taken a step further and provides a multidimensional conceptualization of psychiatric disorders with neurobiological roots. RDoC views psychopathology as the product of dysfunctions in neural circuitry.¹¹

Diagnostic systems in psychiatry, including ICD-11, are trying to confirm the categorized mental disorders with a multifactorial attitude, with genetic and environmental aspects, on one hand, and phenomenological or descriptive approach, on the other hand.¹² The diagnostic systems do not simply endorse biological reductionism. Furthermore, the not so scientific backup to psychiatric diagnosis is conducive for the scientific research to continue and progress considering the fact that the discoveries cannot be rushed. The same can be evidenced by the evolution in the neurobiology of dementia.

Alzheimer's disease is a 100-year-old concept but has evolved as a definitive diagnosis over the 20th and 21st centuries. The diagnosis has moved from a rare diagnosis in younger patients to a worldwide epidemic common in the elderly. The biomarkers and neuroimaging findings have re-shaped the understanding according to the scientific perspective. Still, the concepts of dementia and Alzheimer's disease continue to evolve, largely due to their complexity as evidenced by historical concepts from the first authors to the latest updates with biomarkers inclusion.¹³

Even the modern biological model of psychiatry has not been spared.¹⁴ It has been criticised for lacking stability in the biological basis of psychiatric conditions and lack of replication of the findings in various studies. However, the progress of biological psychiatry is so glaring that it cannot be disregarded. The findings such as dysregulated Hypothalamus-Pituitary-Adrenal axis in patients with major depressive disorder, neuroanatomical findings on imaging in patients with schizophrenia and obsessive-compulsive disorder are just a few examples of a wide range of evidences that are gathering over the years.^{15,16,17} Realizing the overlap of symptomatology, role of environmental factors and the fact that our understanding of the neurobiological markers for psychopathologies is continuing to grow, biological models continue to work closely with psychosocial models.

The use of psychopharmacological agents is always done in conjunction with psychotherapeutic treatment; thereby a holistic approach is maintained. The bio-psychosocial model has emerged as an evidence-based response to the biomedical paradigm. It looks beyond (without excluding) biological factors, understanding psychological and social experiences as risk factors that can be targeted into regular care. For any mental health system to be compliant with the right to health, the biomedical and psychosocial models and interventions must be appropriately balanced.¹⁸

Criticism: Bio-reductionism and over-prescription

The field of psychopharmacology continues to progress as evidenced by published research articles with rigorous study methodology.¹⁹ The use of loose terms for psychiatrists such as ‘pill pushers’ is detrimental to the patients in need of help. The psychopharmacological revolution in 1950s has re-shaped psychiatry. The therapeutic utility of psychotropics can be clinically witnessed by the fact that seventy-five years ago, there were no specific psychiatric medications, and the average stay in a psychiatric hospital was 11 years. There had been a huge global burden of untreated psychiatric disorders. It is imperative to state that physicians using lithium and anticonvulsants successfully treat 70% to 80% of patients who suffer from bipolar disorder and most of the affected individuals can lead gratifying lives with these treatments.^{20,21}

Furthermore, deinstitutionalization, psychiatric rehabilitation and community psychiatry would have been a dream without the use of psychopharmacological

agents.²² In current practice, restraints and seclusion are hardly used. The rationale for neuromodulation is derived from the research identifying neurobiologically localized substrates for refractory psychiatric symptoms. Use of neuromodulation techniques (e.g. deep brain stimulation for refractory depression and obsessive compulsive disorder) has been a landmark in the treatment of psychiatric disorders that again emphasizes the role of neural circuitry underlying the pathophysiology of psychiatric disorders.²³ These treatment modalities have brought the improvement rates in psychiatry equal to, or above, those achieved by doctors treating any other medical illness.²⁴

Criticism: Transforming normality into pathology

‘Stigma’ and ‘diagnostic labelling’ have been frequently a topic of active criticism in psychiatry. It is usually argued that psychiatry remains blind to the fact that it is its own spurious pathologizing of normality that creates the stigma. It has been blamed that there has been progressive increase in the number of psychiatric diagnoses incrementally with the number of psychotropic drugs being developed.²⁵ The critiques suggest that the profession rebrands the usual emotional states and attaches labels to everyday conditions such as shyness being called social phobia, and medicalization further profits the pharmaceutical companies and doctors.

However, the criticism of psychiatry for pathologizing emotional states is misleading. The diagnostic expansion in psychiatry and development of interventions to relieve psychological distress have happened based on research and evidence. It is the growing understanding of mental health symptoms and public knowledge that people are increasingly showing up to clinics to seek help for mental health issues.¹ An interesting example is the recent inclusion of gaming disorder, gambling disorder in the diagnostic systems, which are pathological behaviour based on the epidemiological data; and additional support from neurobiological evidence including impaired activity in prefrontal cortex with reduced cognitive control.^{26,27}

Moreover, there have been constant revisions in the diagnostic systems. One such change can be seen with the revision in the diagnostic categories with respect to sexual orientation. The working group for the classificatory systems such as ICD-11 no longer recommends diagnostic classification based on sexual orientation unlike earlier diagnostic systems.²⁸

The diagnosis of a mental illness is not always equal to a need for medicinal treatment. For example various common mental disorders like anxiety disorder can be addressed primarily with non-pharmacological approaches.²⁹ The need for pharmacological treatment is a multifaceted clinical judgment that takes into consideration symptom severity, the distress and disability associated with the symptoms, risks and benefits of existing treatment modalities. The concern regarding the irrational use of medications or other interventions is applicable to all branches of medical science in general, including psychiatry, but it is mostly

uncommon in clinical practice. However, it needs urgent reform which would require monitoring of prescribing, clinical assessments and interventions at individual and institutional level.

Conclusion

Psychiatry is being critically scrutinised over years. Increasing criticism from various sectors including clinicians from other specialties helps mental health professionals to evaluate the criticisms levelled against psychiatry. The social component of psychiatry perhaps has a much bigger role than it has in other medical branches and thus attracts more scrutiny. Diagnostic systems and treatment approaches have progressed to incorporate the biological evidence. Newer approaches are focused on the etiological factors. Alzheimer disorder is a very good example of this journey. Criticisms about psychiatry should not be ignored and when taken in good spirit these may help mental health professionals to introspect and grow. At the same time, clinicians needs to remain cautious that psychiatry remains holistic, rather than sticking to only one school or etiological model or mechanism for psychiatric disorders, as the biopsychosocial factors are at the core of psychiatry. Psychiatry, as a medical discipline needs to continue the ongoing evolution with a balanced and holistic approach. While criticisms will be addressed with research evidences and newer understanding; there is a need to reach out to genera public and other professionals with these information so that psychiatric care for patients remains unhindered.

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Case report

Care of a nonagenarian adult with dual sensory impairment and other morbidities at home: a case study from India

Loknath Sahoo, Aditi Ava Rath, Suresh Chandra Rath

Abstract

Background: The global elderly population has an ascending trend where the numbers of nonagenarians and centenarians are growing fast. The level of dependency and care needs of older individuals are linked to their morbidities and functional impairments. **Objective:** We share the experience of the challenges in providing care for a nonagenarian with multiple morbidities including dementia, dual sensory impairment, edentulism, and chronic kidney disease in a family home from India. **Case study:** Information about the morbidities and caring challenges was collected and findings were discussed along with available current literatures. Multimorbidity and dependence for activities of daily living led to a number of challenges, including socialization and wellbeing of the older adults and the caregivers. The consequences of these illnesses as physical and psychological symptoms, feelings and emotions were observed, interpreted and presented. Lapses of caregiving were noted and there was discussion about the methods of mitigation. **Conclusion:** Inevitable old age issues require not just treatment, but care to maintain the functionality of the older adults at the best possible level. Happiness and satisfaction of life of the elderly should be the objective of caregiving. For common geriatric problems, without the need for life-support, family-based care is probably better than institutional care.

Key words

Care, Caregiver, Family, Morbidity, Older Adults, Sensory Loss

Introduction

Ageing is an inevitable biological phenomenon in human life, and usually continues up to a geriatric phase. Older adults are often considered as youngest-old (65 and 74 years), middle-old (75 and 84 years), and oldest-old (over 85 years). In demographic studies, they are sometimes grouped as septuagenarian (70-79 years), octogenarian, (80-89 years) nonagenarians (90-99) and centenarian (100 years and above). In India, 10% of older adults are in the octogenarian or above group, whereas the number of nonagenarians are around 1.6 million.^{1,2} Oldest-old population possess significantly more underlying chronic

comorbidities with inimitable clinical presentations. The clinical research is usually under-represented by nonagenarian and centenarians for obvious reasons. It leads to poor database generation for evidence-based standard care and treatment modalities. Cardiovascular, cerebrovascular, hip joint fracture and metastatic cancer are the main causes of death in these age groups.³ Many of the chronic health issues are also progressive and irreversible in this age.

The old-age dependency of these groups is not only related to multiple physical health problems but also psychological issues. Visual and hearing loss are progressive among elderly population. Age-related macular degeneration (AMD) is the primary cause of irreversible vision loss and legal blindness. Similarly, profound hearing loss is also another irreversible sensory loss. World Health Organisation (WHO) defines deafness as the complete hearing loss in both the ears and is termed “profound hearing impairment” when hearing loss in the better ear is more than 90 dB.⁴ Each of these sensory impairments independently effect to compromise the quality of life (QOL). Double sensory impairment (DSI) described as deaf-blindness, are seen increasingly more challenging among nonagenarian and centenarians.^{5,6} Independently, hearing and vision impairment are risk factors for dementia; whereas DSI significantly contribute for a higher risk of all-cause dementia in older elderly.⁷ Adding to it edentulism,⁸ sleep deviation,⁹ urinary incontinence,¹⁰ etc. contribute to reduce the QOL. Mental health is a critical constituent in the health and well-being of any older adult. Despite having many more apparent health issues, some elderly individuals enjoy greater longevity and better QOL. Happiness and satisfaction of life plays important role to reduce depression and stress in old age.¹¹ The Indian old age population is in the ascending trend which needs greater attention and resources for their health and QOL.¹²

This case study is focused on an Indian nonagenarian with multiple morbidities including dementia, DSI, edentulism, and chronic kidney disease (CKD) etc. Emphasis is given on the mitigation of challenges and family-based care.

Case history

This is the case of a 97-year-old male (Mr N), who lived with his family in Bhubaneswar, a city in Eastern India,

till his death. He was being cared for by the family members. He was perambulated and made fit for his daily work till the last fortnight of his life. Suddenly he suffered a cerebral stroke with hemiplegia and passed away. He was residing in an Indian Hindu joint family where the primary caregivers were his family members. During his last two years of life, he was subjected to a routine medical checkup regularly at quarterly intervals. Morbidities status of Mr N is given as follows.

Ophthalmic issues and vision status

He suffered from presbyopia, floaters, cataract and AMD. Surgical removal of cataract was done in one eye at the age 93 and atrophic AMD was detected at 95. Till the age of 95 years, he could read and write with his recommended spectacles up to his satisfaction. After this point, he could read only the bold headlines of local newspapers with his specs and an additional optical low vision aid (magnifying glass) (Fig. 1). AMD caused the difficulty of facial recognition due to blurred or reduced central vision.

Edentulism and oral health

Mr N was completely edentulous by the age of 80 and using a removable denture. Every day he was wearing the denture for 12-16 hours. Use of a denture could overcome his feeding difficulties, improved functional phonation, restored the facial structure and smile, heightened his socialisation and self-esteem (Fig. 2&3). Moreover, he felt delighted with his denture. Mr N had no natural tooth in his maxillary and mandibular dental arches so a complete removable denture was recommended to him. The denture fitness was rectified every year as the residual ridge resorption increased gradually. He was advised not to use the denture for all the time to avoid stomatitis and other oral cavity infectious diseases. Denture was cleaned every day to remove biofilm with suitable cleansers to maintain his oral hygiene. Periodical denture bleaching was done in the cleanser containing sodium hypochlorite to keep the denture smooth and bright.

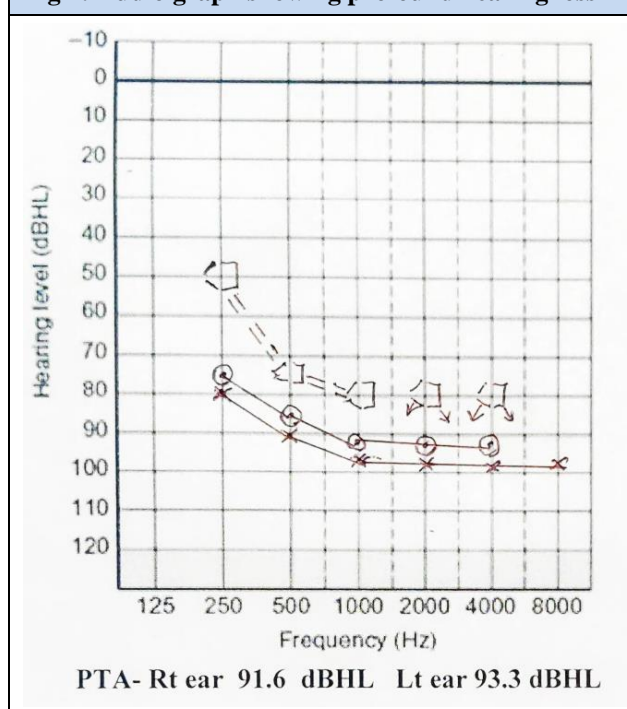
Otological issues and hearing status

Mr N had progressive age-related hearing loss (ARHL) for last 10 years of his life. The presbycusis, tinnitus and mild vertigo were his other otological issues. The level of hearing impairment based on audiogram assessment (Fig. 4) was Grade 4 (profound hearing loss). The audiometric value of profound hearing loss was over 90 dB in both the ears. Mr N could hear nothing in a noisy environment or during any cross-talk. He could only hear a very loud voice with body language and lip reading. Hearing loss also affected his speech discrimination and oral communication.

Psychological status

Mr N suffered with dementia for more than 10 years. There was gradual deterioration in his cognitive functions. The degree of dementia became severe during his last three years of life. He had been actively cared for all his daily activities like cleaning of denture and oral cavity, bathing, use of wash-room, physical exercise, feeding, amusement and socialisation at home for last two years of his life. He could remember remote events far better than the recent events. Invariably he was forgetting many of his activities of daily living (brushing of his denture, bathing, taking medicine, etc.) and date, time and day. Sometimes he would ask to perform these activities repeatedly. Spitting and incontinence micturition in inappropriate places were some of his abnormal activities. Memory problems became severe with him having difficulty recognizing relatives and friends. He became perplexed with people and was going over past incidences with no relevance. During his last month of life, two significant episodes were recorded. One day he called upon some of the family members and stated that 'he has died'. He also asked his son to invite other family members to see him, as is the custom when someone dies. Another day, he claimed that his youngest son (who was living away) talked with him. Similarly, he told that his wife who had died years back had come and called him to accompany her to heaven.

Fig. 1: Reading with spectacles and magnifying glass	Fig. 2: Face without denture	Fig.3: Face with removable denture
		

Fig 4: Audio graph showing profound hearing loss

Deviation in sleep habit

Mr N was sleeping about a total of 9-11 hour daily with intermittent awaking. Napping and sleeping duration was 5-7 hours during day and 3-4 hours during night. Sleep talk and sleep terror during night was often observed. But he was not aware that he was talking and he did not remember it. Every night while he was not sleeping, his activities included sitting alone with open eyes for hours altogether, roaming and moving things from one place to another.

Functional urinary incontinence

There were no abnormalities within the bladder and micturition pathway. Post-void residual volume was normal (50-70ml). Frequency of micturition was at every 2 to 3 hours. Urinating in places other than the washroom and incontinence of micturition were regular concerns. He could not recognise the urge to pass urine, nor the toilet room. This was an additional burden of care which needed special attention.

No history of infectious diseases

Mr N did not suffer from any infectious diseases during the last several years of his life. During COVID-19 pandemic, all five members of the family suffered from coronavirus infections. Interestingly he did not receive even a single vaccine dose. He could not be isolated due to the unavailability of hired caregivers during peak pandemic period. Moreover, during last two years before his death some of the family members and caregivers close to him suffered from dengue fever and chickenpox. Mr N did not get infected with these vector-borne and contagious diseases.

Clinical investigations

His diagnoses included CKD, mild dysphagia, and idiopathic constipation. He did not have diabetes or hypertension. Mostly, his vitals were in the normal range corresponding to his geriatric age group (BP around 120/90-130/95; pulse rate 84 to 128 beats/minute, oral temp 98-98.8°F, respiratory rate 12-30 breaths/minute). Routine pathological tests of blood and urine were done quarterly during last two years of his life to monitor his health. His haemoglobin (Hb) was between 12-13 gm/dL. The fasting and post prandial blood sugar level was maintained at <90mg/dL and <120mg/dL respectively. Liver function tests and renal function test reports did not show much deviation. CKD was limited to albuminuria (500-1500mg/24 hours), serum creatinine (1.24-1.51mg/dL, normal range 0.8-1.3 mg/dL) and bipedal edema at times. Prostate specific antigen (PSA) value was 1.3ng/mL; which was within the normal range. He was maintaining normal blood sugar levels despite high sugar intake in his diet. His blood pressure was monitored and it was within normal range.

Medications

He was taking acetylcysteine - taurine combination in the evening daily and alpha-ketoanalogue in the morning to support kidney function. He also received two doses of intramuscular nandrolone decanoate (25 mg); which were administered at 12 weeks interval. Besides these, prucalopride 1 mg at bed time daily was given for chronic idiopathic constipation. A diuretic (hydrochlorothiazide 12.5 mg) was given when required to reduce the bipedal edema.

Box 1: Daily routine care and assistance at home

1. Maintaining oral hygiene, cleaning denture
2. Shaving, hair dressing, skin care and bathing
2. Around fifteen minutes walking with frame and physical exercise
3. Around half an hour of sun-bathing daily.
4. Breakfast, lunch and dinner in scheduled time with evening health drink
5. Interaction with family members (individually or in groups).
6. Maintaining dignity as the head of the family.
7. Reading bold headlines of local news daily with his specs and magnifying glass.
8. Listening the light music may be with a high volume of sound.
9. Timely prompting of washroom activities by caregivers.
10. Brief outing and socialization to overcome the loneliness.

Care at home with family

As Mr N did not have any serious morbidity requiring institutional care or life support; he was cared for at home. With all his routine daily life activities, special attention was given to maintain his hygiene, entertainment and socialization. He often expressed his heartfelt

happiness and blessed his caregivers. His nutrition was well taken care of through carefully monitoring of his diet, he had homemade fresh fruit juice, and regular supplement of protein, vitamin and minerals. Details of some of the care and assistance provided are enlisted in Box 1.

Discussion

The care of older adults needs to be focused on morbidity, cognitive abilities, depression and anxiety, nutritional security, and social well-being.³ In this case report we have presented the issues and challenges in taking care of a nonagenarian, at home in a joint family set up in India. We discuss here various issues that were the focus of care.

Sensory impairment

DSI in an extreme degree was observed in the presented case. The rate of DSI increases in the older age groups. Presbyopia, AMD and profound hearing impairment (PHI) as the pathology of DSI affect daily life style of the affected older adults remarkably.¹³ Nutritional supplement for elderly plays some role in the prevention of AMD and ARHL progression. It is suggested that antioxidants with the β -carotene diet, both vitamins C and E, zinc and long-chain polyunsaturated fatty acid-containing food can reduce the risk of DSI in the elderly.^{14,15} These authors also found that physical activity was helpful in slowing the progression of AMD and ARHL. It is also reported that older adults having physical activity had better cognitive functioning than those did not.¹⁶ The use of devices to assist vision and hearing aids may help to improve the QOL.

DSI in old adults can substantially increase the risk of cognitive impairment and dementia due to social isolation, depression, and reduced physical activity. Alzheimer's disease is the most common form of dementia in elderly population. As there is not a reversible treatment for this disease, patients' lives can still be improved with good lifestyle habits, mental and social well-being activities and appropriate healthcare.¹⁷ In a cohort study it is found that DSI attributed 28% to the all-cause dementia. Elderly population with DSI experience high rates of communication difficulties, cognitive impairment and poor QOL.^{18,19} In fact, they need special attention from caregivers.

Edentulism and oral health

Edentulism is a debilitating and irreversible state of oral condition which remarkably affects the nutrition and speech in elderly. Nutrition is an important factor responsible for physical and mental health. Moreover with a denture, one can relish a wide range of food to meet the nutritional requirement. Mr N was completely edentulous for several years and was using the removable denture to restore effective mastication, aesthetic value, reduced self-esteem and blighted social integration.⁸ There are reports of increased cognitive deficit for maladjusted dentures and complete edentulous elderly

over 15 years.²⁰ Several functional neural circuits are found which connect the masticatory organs and the hippocampus. Masticatory action is related to neurogenesis at the hippocampus and may help to maintain cognitive functions.²¹

Feelings and emotion

Observations similar to the presented case where Mr N believed that 'he was dead' have been reported in other studies in neurological illnesses and dementia.^{22,23} His experience of hearing dead people and people who were far away, experience of seeing God and conversing with him, seeing dead relatives are hallucinatory experience common with people with dementia and these can happen with older adults with many physical comorbidities presenting with delirium. However some may describe these as near-death experiences.²⁴

Deviated sleep patterns

Elderly people are associated with several deviated sleep patterns such as change in sleep timing, short sleep night, increased incidences of daytime naps, and increased awakening hours in night etc. Usually longer sleep duration gives a health benefit to the centenarians and nonagenarians.²⁵ In the present case, 3-4 awake hours in each night with random movement in and around the bedroom and daytime sleepiness created a stressful situation for caregivers. Somniloquy (sleep talking) is a sleep disorder characterized by unconscious or unintentional talk while asleep was observed in the present case, as has been reported elsewhere.²⁶

Urinary incontinence

Functional urinary incontinence was a morbidity which created considerable challenge for the caregivers. In nonagenarians and centenarians there are increasing chances of involuntary release of urine. In addition, Alzheimer's disease and dementia put these elderly groups at a heightened risk of incontinence.^{10,27}

Apparent resistance to COVID-19

It was surprising that during COVID-19 pandemic, when five family members and caregivers were affected, Mr N did not suffer from COVID-19; in spite of the fact that he did not receive the vaccine. The reason for this is not clear. The literature regarding this is meagre. Interestingly few newspaper articles in India suggested centenarians have fought COVID-19 pandemic battle better than octogenarians and nonagenarians; with the fatality rate of centenarians being recorded as 0.06% and 5% in Maharashtra and Karnataka states respectively.^{28,29} However, there are certain reports suggesting that older-old males especially in the age groups of 90s and 100s were more resilient to the coronavirus infection.^{30,31} This would need further evaluation.

Care and longevity

Despite multiple comorbidities some elderly people enjoy long life. Happiness is associated with a mechanism

which lessens the likelihood of all-cause mortality.¹¹ In a cohort study it was found that one of the significant factors that contributed to happy life of nonagenarians/centenarians was “living with family member”.³² Similarly, a study including a large sample size postulated ‘higher life satisfaction significantly lowered risk of mortality; while depressive symptoms significantly predicted higher risk of mortality’.³³ Besides, several articles highlight the role of adequate sleep hours and physical exercise for health and well-being of older adults.^{16,34} Based on the experience of the presented case, some suggestions for caregiving is given in Box 2.

Box 2: Some suggestions for caregivers of older adults with sensory and cognitive impairment

1. Older adults deserve affection and care from the family members for better QOL and a life with dignity.
2. Maintain the elderly as the head of the family.
3. Listen to them with patience and let them talk with slow pace.
4. Repeat your verbal communication slowly and clearly for hearing impaired elderly.
5. Manage the volume of TV, radio, mobile, or through technology for their comfortable hearing.
6. Provide assistive devices for hearing, vision, chewing, walking and encourage for their regular use.
7. Keep them engaged in various activities.
8. In case of urinary incontinence regular prompts for voiding is helpful.
9. Elderly with sleep problems may need special assistance and care.
10. Elderly with severe sensory or cognitive impairment feel better being with someone, even when there is no communication.

Limitations

There are a few limitations in this report. Except DSI, details of other sensory impairments were not available. There was no clinical record of evaluation and treatment was found for dementia and sleep disorder. There was no serological report to support a probable COVID-19 resistance.

Conclusion

Inevitable old age issues require not just treatment but care to maintain the functionality of the older adults at the best possible level. Sensory impairments and other comorbidities can lead to a number of physical and mental illnesses and disabilities in older adults especially the oldest-olds. Patient specific care considering the impairments and morbidities reduces the management burden of caregivers at home. This case report highlighted that families could take care of elderly even with multiple comorbidities in the home environment. It may be challenging, but with the support of professional monitoring, regular clinical investigations and management of comorbidities, it may be possible to care for the older adults at home. Family-based care is

probably better than the institutional care for the older patients who do not need any life-support. Care at home can be mutually satisfactory for the older persons and their caregivers.

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Case report

Stevens-Johnson syndrome with carbamazepine in an elderly female patient: a case report

Shreyan Kar

Abstract

Background: A severe complication of some medications, including carbamazepine, is Stevens-Johnson syndrome (SJS). This condition is an immune-based reaction that commonly affects the skin and mucosal surfaces but also may affect the lungs, eyes, and other critical organs. This can be fatal in roughly a fifth of patients, with the risks increasing if not treated promptly and if it affects a large body surface area. **Objective:** A case of SJS secondary to carbamazepine is presented to highlight the severity of symptoms, associated risk factors, multidisciplinary involvement for treatment and the short term outcome. **Case study:** A 76-year-old Indian female patient with multiple morbidities was admitted after presenting with multiple rashes which developed into blisters on various parts of her body. She was taking carbamazepine. It was diagnosed as SJS with Kaposi varicelliform eruptions. She was treated with steroids, antivirals and supportive care. She developed photophobia and dryness which was diagnosed as keratoconjunctivitis sicca. Later the vision was impaired. **Conclusion:** This case highlights the need for intensive multidisciplinary treatment and care for SJS at a specialist centre, especially for cases with severe symptoms. Patient education for early identification and reporting of the side effect may lead to better outcome.

Key words

Aged, Carbamazepine, Stevens-Johnson syndrome, Toxic epidermal necrolysis, Kaposi varicelliform eruptions, keratoconjunctivitis sicca

Introduction

Stevens-Johnson syndrome (SJS) is a rare dermatological condition that is characterised by widespread blisters, full-thickness epidermal necrosis, and sloughing. Toxic epidermal necrolysis (TEN) is similar to SJS but more severe. These present as a side effect of many commonly prescribed medications, including carbamazepine, and can be serious with fatal consequences. Although most patients recover, many have long-term consequences.

Literature review

Symptomatic presentation

Often, SJS starts with a presentation of flu-like symptoms, including high fever, sore throat, cough, and joint pain.¹ This prodrome can last up to 14 days, and can at times include vomiting and diarrhoea.²

Disease progression leads to eroding mucous membrane lesions, which also can involve the mouth and throat, eye, and genitals. Furthermore, epithelium necrosis of the respiratory and gastrointestinal systems can occur causing respiratory distress and severe diarrhoea respectively. Acute kidney injury may follow acute tubular necrosis if there is renal involvement. Those recovering from the initial acute episode may be left with severe scarring, disfigurement, and trauma.³

Differentiating SJS and TEN: Both SJS and TEN are related in pathogenesis but are differentiated depending on the percentage of skin and mucous association. SJS has less than 10% total body surface area involvement compared to TEN which has a greater than 30% total body surface area involvement. There is an overlap of conditions between these two percentages.⁴

Epidemiology

The risk of SJS/TEN reaction for carbamazepine has been reported at 1 to 10 per 10,000.⁵ The incidence of SJS/TEN across all ages in the UK is approximately one to two cases per million per year.³ In India, SJS/TEN rate is not clear, however, a review reported cutaneous adverse drug reactions (CADRs) in 9.22 out of 1000 cases, where SJS/TEN was seen 6.84% of the time with a 16.39% mortality.⁶ A population based cohort study in Japan found the prevalence of SJS/TEN as 0.01%, 2.3 cases/100,000 person-years over 7.5 years.⁷ SJS can affect all age groups, with higher-risk populations being sufferers of human immunodeficiency virus (HIV) infection, autoimmune diseases, those immunocompromised, and those with underlying malignancy.^{1,7}

Aetiology

This disease's cause is unclear; however, it is most associated with hypersensitivity reactions to medications.

Common suspects in cases of SJS are allopurinol, carbamazepine, lamotrigine, nevirapine, oxicam anti-inflammatories (meloxicam and piroxicam), phenobarbital, phenytoin, sulfamethoxazole, and other sulfa-antibiotics, sulfasalazine.¹ From this list of medications carbamazepine, broadly used to treat epilepsy disorders, trigeminal neuralgia, and chronic pain, has relatively high rates of hypersensitivity, between 1/1,000 and 1/10,000 new exposures to the drug.⁵

SJS is also known to be associated with viral infections including herpes simplex virus and neoplastic disease.^{1,7,8} Prevention is made challenging when considering the unpredictable nature of hypersensitivity reactions.¹

There remains a genetic component between carbamazepine and SJS/TEN, specifically to carriers of the human leukocyte antigen (HLA) B*1502 gene; most commonly carried by the Asian population.⁹

Investigating SJS-like presentations

While SJS is predominantly diagnosed based on symptom and clinical history, a few investigations and assessments can be used to aid this. In the first few days of a drug eruption, raised levels of granulysin can indicate the condition.¹⁰ If possible, to be definitive, a skin biopsy is usually required, to rule out other blistering rash conditions. The biopsy histopathology will show necrosis of skin keratinocytes and cells of the full epidermis.¹¹

Blood testing will be essential for the management of electrolyte, fluid and nutrient abnormalities. It may also help indicate prognosis and effects on other organ systems such as liver function tests and renal function tests.

Severity scoring is useful in predicting the chance of death for SJS/TEN. SCORTEN is one such tool used in assessment, which should be completed at the time of admission.¹² The following factors all score 1 point if present: age over 40 years old, malignancy, heart rate over 120, initial percentage of epidermal detachment over 10%, urea over 10mmol/L, glucose over 14mmol/L, bicarbonate under 20 mmol/L. The risk score related to mortality where a score of 3 is 35.3%, 4 is 58.3% and 5 or more is 90%. SCORTEN is currently the best validated tool available for this condition.¹²

Another more recent scoring system for SJS is ABCD-10, which factors: age over 50 years (one point), bicarbonate level under 20 mmol/L (one point), cancer present (two points), dialysis prior to admission (3 points), 10% or more epidermal detachment (one point). Again, higher scores indicate a higher risk of mortality.¹³

Patient and caregiver education

Early recognition is important for SJS/TEN. While prescribing medications with possibility of such side effects, patients and caregivers should be given information and the risks highlighted. This will lead to earlier treatment, preventing a severe case from developing. Key symptoms which should prompt seeking medical advice are flu-like symptoms, such as a high temperature, sore throat, cough and joint pain, and a rash

that is made up of multiple dark circular patches, blisters, and painful sores. Patients should immediately seek help if this develops into wheezy breathing, chest tightness, and face/mouth/lips/throat swelling.¹

Treatment approaches

Treatment of SJS is multifactorial and dependent on the disease being recognized early, and the patient needs to receive specialist treatment in a dermatologic, intensive care unit setting or a burns unit if severe. The removal of a suspected drug-related hypersensitivity cause should happen immediately. An ophthalmology opinion and eye care are essential for patients with eye involvement. Reducing infection risk is important as the protective skin and mucosal layers are lost. Supportive care including analgesia, fluid replacement, and nutritional support should be provided. Specialist treatment including intravenous immunoglobulin (IVIG), tumour necrosis factor (TNF) - alpha inhibitors, ciclosporin, and corticosteroids is debated and may be considered with specialist advice.¹⁴ There is an ongoing debate about specialist treatments such as IVIG and cyclosporin.¹⁵⁻¹⁷

Prognosis

SJS/TEN is potentially very serious with high mortality risk, predicted by the extent and severity at presentation. In the UK, mortality for SJS is less than 10%, with the figure rising to 30% for TEN, and overall SJS-TEN mortality is about 22%.¹⁸ In Italy, data shows a mortality rate of 16.9% for SJS and 29.4% for TEN.¹⁹ A study in India recorded overall mortality of SJS/TEN of 21.6% with TEN specifically of 28.6%.²⁰

The general outlook for SJS/TEN with treatment is recovery in eight to twelve days, with long-term issues such as scarring and pigmentation of the skin, increased risk of pulmonary diseases such as bronchiolitis, and a myriad of eye problems including conjunctivitis, ectropion, and entropion.²¹

Objective

A case of an elderly female patient who developed SJS while on carbamazepine is presented to highlight the severity of symptoms, associated risk factors, multidisciplinary involvement for treatment and the short term outcome.

Case history

Background

A 76-year-old Indian female patient was suffering from multiple illnesses: Parkinson's disease, chronic obstructive pulmonary disease, hypertension, depression, and osteoporosis with associated compression fractures of vertebrae. She also had history of burning pain in the oral cavity for a long period of time and perioral dyskinesia with teeth grinding movements. She was on various medications for these illnesses, including carbamazepine 200 mg, twice a day, initiated by local neurosurgeon due to chronic face and jaw related pain.

Presentation

The initial presentation included discolouration and rashes which developed into erythematous vesicles, starting on the head and scalp and progressing to the torso and back, (Figure 1), with palms and soles involvement (Figure 2). There was more severe involvement of mucous membranes in the oral cavity, lips, and surrounding the eyes (Figures 3 and 4), and genital parts. These vesicles blistered (Figure 5) and darkened in colour after several days. Other associated symptoms she developed included fever which was not associated with chill and rigor, a non-productive cough, and burning micturition.

Figure 1: Early skin involvement around eyes and lips; discoloration of skin around ear and neck.



She was diagnosed with SJS with Kaposi varicelliform eruptions (KVE) secondary to carbamazepine. Along with the SJS, left pyelonephritis and febrile neutropenia were noted.

Treatment involved parenteral steroids, acyclovir, and supportive care, e.g. fluid resuscitation and oral nutrition. With these treatments, over roughly four weeks in hospital, the reaction was controlled, and her skin began to heal (Figure 6). Besides internal medicine, multidisciplinary teams from dermatology, ophthalmology, and psychiatry were involved.

Figure 2: Blistering on soles of feet.



At the time of discharge, regular medications were continued (telmisartan, co-carledopa, trihexyphenidyl, clonazepam, sertraline) apart from carbamazepine. Other prescribed medications included oral prednisolone, eye drops (moxifloxacin, prednisolone, artificial lubricant) topical acyclovir, triamcinolone and clotrimazole cream for lesions and mucosal surfaces, and nebulisers (salbutamol, ipratropium). Nutritional and diet advice was provided alongside prescribed supplements and laxatives as needed. Outpatient follow-up was arranged.

Figure 3: Mucosal involvement of lips and inside mouth visible.



Outcome

Recovery was gradual. Roughly two months after this reaction, she continued to have pain in the eyes and photophobia. Following ophthalmological examination, she was diagnosed to have bilateral keratoconjunctivitis sicca. More lubricating eye drops were prescribed. She gradually developed an impairment of her vision which required corrective eye surgery. Long-term permanent sequelae were unclear at the period of preparing this report.

Figure 4: Visible discoloured circular patches and blistering on the face and upper chest.



Figure 5: Blistering and loss of epidermis on the scalp and upper back.



Figure 6: Phase of recovery after commencing treatment



Discussion

This case presented with characteristic dermatological changes as would be expected in a case of SJS. The visible dark patches on skin, developing into blisters and epidermal sloughing were noted. Involvement of mucosal surfaces was also present. The mucocutaneous lesions were found across the whole-body including palms and soles. Regarding total body surface area, no formal calculation was recorded, however clinically, signs indicated a severe level of SJS, rather than TEN.

The assessing dermatologist also considered KVE. Also known as eczema herpeticum, KVE is a severe viral skin infection predominantly caused by the herpes simplex virus (HSV).²² This condition typically occurs in individuals with pre-existing skin conditions, such as atopic dermatitis or eczema. KVE manifests with a rapid spread of herpetic blistering vesicles and rash. While KVE is typically a localized condition, in some cases, it can lead to the development hypersensitivity of the immune system. This systemic reaction can sometimes lead to SJS.²³ In this case, there may have been an underlying HSV infection that, alongside carbamazepine, exacerbated the patient's SJS.

The diagnosis of SJS with KVE secondary to carbamazepine was made clinically with relevant history. There were no diagnostic tests performed, and no specific blood tests such as granulysin or skin biopsy was taken. It is probable that these were not required considering the clarity of the clinical presentation.

The trigger to the SJS in this case was identified as carbamazepine and she also had associated KVE. Carbamazepine is a well-known trigger of SJS and numerous case reports have been documented.^{5,9,24} A study in India found carbamazepine to be the most common drug suggested as the cause of SJS with 44% in the particular sample.²⁵

Recently, there is emerging evidence of specific genetic markers that can pose an increased risk of developing SJS and similar cutaneous reactions. These have been predominantly found in Asian population, including India, China, Malaysia, Taiwan etc.²⁶ There is an argument to be made that there should be genetic screening for relevant alleles prior to starting carbamazepine or other drugs known to cause SJS.^{27,28}

Conclusion

Steven-Johnson syndrome is a severe dermatological reaction that can in some cases lead to death. The case described here had SJS secondary to carbamazepine, associated with and complicated by KVE. There was significant mucosal and ocular involvement. Carbamazepine was stopped, supportive care and antiviral therapy helped to control the reaction, and recovery process was gradual. As a short term sequel, the patient developed bilateral keratoconjunctivitis sicca with significant impairment of vision.

There is a known strong association of SJS to certain medications. SJS should be considered as a potential adverse effect, when starting these medications. Due to the potential severity and multi-organ effects, early intervention is key for an optimal outcome. Discontinuing the suspected medication is critical, followed by best supportive management in a multidisciplinary specialist care setting.

With the known prevalence and incidence of this reaction, it is important to educate patients on relevant sign and symptoms, their severity and life-threatening risk of SJS/TEN. By providing education patients can seek medical care earlier in disease course, which may lead to better outcome.

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Review

Rehabilitation in older adults with dementia after hip fractures: a narrative review

Ayodeji Teslim Afolabi, Oluwafemi Thomas Alonge, Ihuoma Rosemary Okereke, Chibuzo Anele Ndukwu, Huma Naqvi

Abstract

Background: Older adults with dementia are at increased risk of sustaining hip fractures. Hip fractures are significant causes of morbidity and mortality, prolonged hospitalization, high risk of care home placement, and increased cost of care. **Aims:** To study the interactions between hip fractures and dementia, rehabilitation interventions or programmes after hip fractures in older adults with dementia, and dementia-focused interventions aimed at improving functional independence and outcomes. **Method:** Relevant literature published up to April 2023 was searched from electronic databases, mainly PubMed and Google Scholar. References of articles collected from these databases were also searched for suitable articles. **Results:** The review found considerable interplay between hip fractures and dementia. The majority of older adults with dementia who sustain hip fractures require hip surgery to reduce pain, enable early mobilization with full weight-bearing, increase functional independence, and promote good outcomes. Rehabilitation post hip surgery involving multidisciplinary team effort mostly led to improved functional independence, better walking ability, and reduced post-operative complications; although older adults with hip fractures and dementia are frequently underrepresented in clinical trials. **Conclusions:** Enhanced multidisciplinary, properly co-ordinated, orthogeriatric rehabilitation service is imperative to achieve the best possible outcomes following hip fractures in older adults with dementia. This should be done by taking into consideration the specific peculiarities of older adults with dementia and should focus on physical, mental, social, and cognitive well-being to improve outcomes.

Key words

Dementia, Hip Fractures, Older Adults, Rehabilitation, Surgery

Introduction

Older adults are at increased risk of developing dementia and hip fractures.¹ Hip fractures are also more prevalent in older adults with dementia resulting in adverse outcomes

such as high morbidity and mortality, increased pain, prolonged hospitalization, increased risk of care home placement, and huge economic burden to healthcare and caregivers.²

Dementia is predominantly a chronic, progressive, neurodegenerative disease with impairment of cognitive, physical, and social functioning.³ Dementia is more common with increasing age and as the life expectancy increases especially in developed countries, this invariably increases the number of people living with dementia.⁴ Globally, there is one new case of dementia every 3 seconds.⁵ There were over 55 million people living with dementia in 2020 and this is predicted to double every 20 years, reaching 78 million by 2030 and 139 million in 2050.⁴

The advancing ageing and increasing life expectancy may increase the global number of hip fractures from 1.7 million in 1990 to 6.3 million by year 2050.⁶ In those older adults with dementia who sustain hip fractures, effective and efficient rehabilitation programmes and strategies are important in achieving reasonable quality of life and improved outcomes following their hip surgery.⁷ This should involve holistic and multidisciplinary approaches focusing on interventions at restoring them towards their pre-hip fractured states as much as practicable.⁷

Method

In this article, we carried out a narrative review of the interactions or relationships between hip fractures and dementia, multidisciplinary rehabilitation interventions, and care models with particular focus on inpatient and community-based interventions. We also looked at interventions that are specifically focused on those living with dementia. Relevant literature published up to 2023 was reviewed. Data was obtained in April 2023 from electronic databases, mainly PubMed and Google Scholar using the following keywords: “dementia”, “cognitive impairment”, “hip fractures”, “rehabilitation”, “cognitive rehabilitation”, and “interventions”. These keywords were combined using Boolean operators (AND, OR). References of articles collected from databases were also searched for suitable articles.

Results

Hip fractures and dementia

Hip fractures and dementia are both common in older adults.¹ They are significant causes of hospitalization with increased morbidity and mortality, loss of independence, and high healthcare costs.¹ People with dementia are up to three times more likely to sustain hip fractures than those without dementia.^{1,2} In a UK study, the incidence of hip fractures among older adults with dementia was 17.4% compared to 6.6% in those without dementia.⁸ This may be attributable to risk factors that are common to both hip fractures and dementia. Factors such as older age, vitamin D deficiency, reduced physical activity, smoking, heavy alcohol consumption, and the apolipoprotein E4 gene can increase the risk of both hip fractures and dementia.¹ Other factors including gait impairment, neurovascular instability, falls, vitamin D deficiency, osteoporosis, sarcopenia, and depression are prevalent in people with dementia and they can in turn increase the risk of hip fractures.¹ Medications may also be a contributory factor. Cholinesterase inhibitors used in the treatment of dementia can cause bradycardia, syncope, increased risk of falls and hip fractures.⁹ Older adults with dementia are also more likely to be taking drugs such as antipsychotics and antidepressants which increase the risk of falls and hip fractures.^{10,11}

Despite multiple co-morbidities and frailty, most older adults with hip fractures require some form of surgical intervention.¹² The type of fracture, patient's prior mobility and co-morbidities influence what type of hip surgery is actioned.¹³ The primary purpose of surgery is generally to reduce pain, enable early mobility with full weight-bearing, and improve functional independence and outcomes.¹³ Hip fractures usually involve the proximal part of the femur up to 5cm below the lesser trochanter. They are generally classified into intra-capsular femoral neck fractures and extracapsular fractures (trochanteric or sub-trochanteric).¹³ Internal fixation can be used in non-displaced intracapsular fractures and total hip replacement in displaced intracapsular fractures. In those with intracapsular fractures who have major co-morbidities such as dementia, or who are immobile, hemiarthroplasty is the preferred option.^{13,14} Extramedullary implants such as a sliding hip screw is used in trochanteric fractures while the intramedullary nail is used in sub-trochanteric fractures.¹⁴

Dementia and subsequent hip surgery do increase the risk of delirium.¹⁵ Older adults undergoing hip surgery also have a significantly increased risk of delirium, and postoperative delirium contributes to worse outcomes.¹⁵ Thus compared to older adults without dementia, hip fractures in those with dementia are likely to lead to possible significantly worse outcomes.

Hospital and community-based rehabilitation

Rehabilitation is defined as “a set of interventions needed when a person is experiencing or is likely to experience limitations in everyday functioning due to aging or a

health condition, including chronic diseases or disorders, injuries or traumas.”¹⁶ Rehabilitation emphasizes person-centeredness and the person's functional independence, through preventing, reducing, or restoring functional loss, maintaining function, and compensating for lost function.¹⁶ In older adults with dementia and hip fractures, collaborative and multidisciplinary orthogeriatric service focusing on achieving optimal recovery post hip fractures with daily input from a geriatrician in acute and rehabilitation phases is paramount.¹⁷ This would ensure improvement in clinical and functional outcomes, prompt diagnosis and management of complications, osteoporosis management, optimization of pain control, monitoring of comorbidities, and reduction in length of hospitalization.¹⁷ Daily geriatrician review can reduce the incidence of delirium.¹⁸ Geriatricians are experienced at managing potential causes of delirium such as pain, infections, malnutrition, dehydration, constipation, polypharmacy, electrolyte derangement, and environmental issues. The involvement of geriatricians in hip fracture management has been shown to reduce delirium incidence.¹⁹

Following hip fractures, older adults with cognitive impairment also have a greater decline in mobility.²⁰ Improvement in functional independence during rehabilitation has been reported in those with hip fractures and dementia however greater relative change in functional independence was noted in those without dementia.²¹ Pre-fracture functional status including pre-fracture cognitive status, level of walking ability and activities of daily living (ADLs) are important predictors of functional outcomes in mobility and ADLs following a hip fracture.²²

Rehabilitation following hip fractures has been included in several guidelines and positive outcomes demonstrated in different areas including functional status, health status, social functioning, mobility, balance, and leg strength.^{14, 23-26} Older adults with hip fractures and cognitive impairment are frequently excluded or underrepresented in clinical trials or studies evaluating the benefits of rehabilitation interventions.²⁷⁻²⁹ Although similar improvements in mobility, function, and fall risk have been demonstrated in older adults with hip fractures and mild or moderate dementia compared with those without dementia,⁷ rehabilitation for older adults with dementia and hip fractures adequate to meet their care needs may not always be provided.²⁷ Access to rehabilitation for older adults with dementia post hip fractures is affected by paucity of evidence on the effectiveness of rehabilitation interventions specific for those with dementia, attitudes, and behaviour of professional staff on the suitability of patients for rehabilitation and resource limitation.³⁰⁻³²

Rehabilitation in older adults with dementia post hip fractures can be provided in an in-patient or community setting. In-patient multi-disciplinary/interdisciplinary rehabilitation interventions for older adults with dementia post hip-fractures have shown significantly fewer occurrence of post-operative delirium, falls, improvement in walking ability and preserved/ improvement in ADLs.³³⁻³⁵ Rehabilitation interventions described in the

literature were adapted to the degree of cognitive impairment and included staff education on post-operative complications such as falls and delirium, goal planning and therapy targeted at functional retraining with a special focus on fall risk factors.^{33,34}

In a retrospective cohort study of older adults with dementia admitted following hip fractures, early, larger daily amounts and increased frequency of rehabilitation were associated with better recovery in ADLs post hip-fracture surgery, although details of the rehabilitation provided were not stated in this study.³⁵ However, other studies have shown no difference in walking ability or ADLs with in-patient rehabilitation for older adults with dementia post hip fractures.^{36,37} Evaluation of an in-patient care model involving geriatrician/orthogeriatrician-led management compared to a model of usual care in which management was led by an orthopaedic surgeon also did not show any significant difference in delirium rates.³⁷

Combined in-hospital and community (home-based) interdisciplinary rehabilitation for older adults with dementia post hip fractures has been significantly associated with improvement in mobility and ADLs without significant increase in falls.³⁸ The intervention programme consisted of pre and post-surgical geriatric assessment, in-hospital and in-home rehabilitation starting a day after surgery and continuing till three months after discharge and discharge planning provided by elderly care nurses compared with approximately three inpatient physical therapy sessions with no in-home visits. Another study evaluating combined in-patient and community (home-based) geriatric rehabilitation compared with in-hospital and geriatric ward-based rehabilitation found no difference in walking ability, ADLs or falls in patients with dementia post hip fractures;² with dementia being

significantly associated with higher risk of falls, impaired performance of ADLs and walking ability. The rehabilitation intervention was individually tailored and included multifactorial fall prevention with balance, strength and high intensity functional exercise programme, modification of the home environment, training in ADLs and use of assistive devices.²

Table 1 summarizes studies evaluating different hospital and community-based enhanced rehabilitation intervention programmes in older adults with dementia post hip fractures.

Dementia-focused cognitive interventions

Rehabilitation interventions that are tailored to the needs of older adults with dementia are critical at ensuring optimal and desirable outcomes.¹ Older adults with dementia who have had hip fractures may experience additional challenges during rehabilitation, including delirium and communication difficulties. As a result, rehabilitation interventions aimed at improving cognitive abilities are invaluable in older adults with dementia. Some of these interventions are detailed below.

Cognition-oriented treatments

These encompass a range of techniques employed to improve cognitive function or processes with a resultant impact on impairment and ADLs.³⁹ They can be classified into cognitive stimulation, cognitive rehabilitation, and cognitive training.⁴⁰ There are differences between these terms,⁴⁰ but they are used interchangeably in literature.^{41,42}

Table 1: Studies evaluating enhanced rehabilitation intervention programmes in older adults with dementia post hip fractures

Study type	Location	N	Intervention group (IG)	Control group (CG)	Outcomes
RCT ³³	Hospital, Sweden	64	Multidisciplinary (staff education, individualized care planning, prevention, and treatment of postoperative complications especially delirium)	Conventional postoperative care	Fewer postoperative complications such as UTI, nutritional problems, delirium, falls in IG. Increased walking ability and ADL performance in IG.
Quasi-experimental design ³⁶	Hospital, Canada	149	Multidisciplinary with staff and family education	Usual care	No difference in mobility. Increased likelihood of returning home in IG
RCT ³⁷	Hospital, Norway	329	Comprehensive geriatric assessment including daily meetings	Usual care in orthopaedic ward	No significant difference in delirium rate. Better mobility in IG
RCT ³⁸	Hospital and Community, Taiwan	160	Multidisciplinary (geriatric assessment, in-hospital and home rehabilitation, discharge planning)	Usual care. Inpatient physio, no home rehabilitation	Improved mobility, ADL performance but increased readmission to hospital in IG
RCT: Randomised Controlled Trial; N: sample size; UTI: Urinary Tract Infection					

Table 2: Features of dementia-focused cognitive interventions

Cognitive stimulation	Cognitive rehabilitation	Cognitive training	Reminiscence therapy
Usually involves a group.	Involves the individual.	Individual or group.	Individual or group.
Occurs in a clinic or care setting.	Occurs in the individual's natural environment.	Occurs in the individual's natural environment.	Involves discussion of past events.
Aims at improving overall cognitive function.	Improves performance and cognitive function.	Maintains activities in specific cognitive domains	Evokes memories and stimulates mental activity.

Cognitive stimulation is usually carried out in a group, in a clinic, residential care, or day care setting. It involves engagement in a range of discussions and activities which are aimed at improving overall cognitive function, orientation, and quality of life.⁴⁰

Cognitive rehabilitation is an individualized approach tailored to the needs of older adults with dementia. This involves a therapist working collaboratively with the older adult with dementia and their family or caregiver, usually in the person's natural environment, setting achievable goals related to ADLs, following a comprehensive geriatric assessment with a view to providing support and improving cognitive function.^{39,43} A multicentre randomized controlled trial (The GREAT trial) showed positive evidence of an individualized cognitive rehabilitation on improved daily life in people with early-stage dementia.⁴⁴

Cognitive training is sometimes referred to as brain training, retraining, or remediation. It can be individualized or applied to a group and usually aimed at improving or maintaining ability in specific cognitive domains.³⁹ It involves cognitive exercise, psychoeducation, and strategy training. Strategy training involves using specific cognitive strategies to promote performance.³⁹

While data is limited about the effectiveness of these strategies for recovery from hip fractures in older adults with dementia, cognitive interventions have been shown to be effective in improving cognitive function in older adults with dementia,³⁹⁻⁴¹ and are likely to improve functional outcomes in those with hip fractures.

Reminiscence therapy

This involves discussion of past experiences or events (individually or in group) with the aim of evoking memories, stimulating mental activity, and improving well-being. Reminiscence is often assisted by prompts such as video, photos, music, and familiar objects. It has shown benefits on communication, quality of life, mood, cognition, and interaction among older adults with dementia.⁴⁵

Table 2 outlines features of cognitive stimulation, cognitive rehabilitation, cognitive training, and reminiscence therapy.

Conclusion

The increasing ageing population in the world invariably means the number of people living with dementia is likely

to continue to rise, as dementia is more common in older adults. Older adults with dementia are at higher risk of sustaining hip fractures; so it is expected that there will be more people with both these conditions as the older adult population increases. This would mean increased morbidity, need for greater clinical input, which will also have a huge economic burden on the older adults, their caregivers, and society.

This review focused on the relationship between hip fractures and dementia, enhanced hospital and community-based rehabilitation intervention programmes that could help improve outcomes, and discussed some dementia-focused cognitive interventions in these patients. Rehabilitation interventions or programmes which involve multidisciplinary team are invaluable at optimising physical, functional, and cognitive recovery following hip fractures. This should be actively encouraged and implemented in all these older adults to improve outcomes and quality of life.

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Manuscript Preparation

Instructions for authors

Introduction

The *Journal of Geriatric Care and Research (JGCR)* (ISSN 2397-5628) is the official publication of Geriatric Care and Research Organisation (GeriCaRe).

Aims and scope

JGCR publishes articles from all fields relevant to old age, with an objective of encouraging evidence based practice in the care of elderly and to share information about good practice.

It is a multidisciplinary, peer-reviewed, scholarly journal covering diverse areas such as geriatric medicine, psychiatry, neurology, nursing care, end of life care, public health and related fields like gerontology, sociology, psychology, culture and law along with Allied Health Sciences like occupational therapy and physiotherapy, etc. Examples of broad areas covered by the journal are: Care and intervention for various specific conditions, disorders or disabilities, standards of care, examples of good practice, end-of-life care, elder abuse and its prevention, legal aspects relevant to old age and support; cultural and ethical issues associated with care, etc. Its readership includes not only the professionals in these fields but also older persons and their caregivers.

Besides regular issues, theme based special issues focusing one aspect of care are also published periodically.

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Type of manuscripts

Research article

The research article should normally be between 3000 and 4000 words in length (excluding references, tables and figure legends). Only the essential references should be given, preferably not more than 25 beyond those describing statistical procedures, psychometric instruments and diagnostic guidelines used in the study. Authors are encouraged to present key data within smaller tables in the appropriate places in the running text. This applies also to review articles and short reports.

A structured abstract not normally exceeding 150 words should be given at the beginning of the article, incorporating the following headings: **Background, Aims, Method, Results, and Conclusions.**

Key words: Up to six key words should be provided. Please use Medical Subject Headings ([MeSH](#)) as key words.

Article should have **Introduction, Method, Results and Discussion** sections. Authors may use relevant subheadings under these sections. Introductions should normally be no more than one paragraph; longer ones may be allowed for new and unusual subjects. The Discussion should always include limitations of the paper to ensure balance. A paragraph of practical implications of the observations is encouraged.

Short report

Short reports (brief communications) are based on original research, observational or evaluation studies, clinical audits etc. These are structured as research

articles and require an unstructured abstract of one paragraph, not exceeding 100 words; and key words. The report should not exceed 1500 words (excluding references, tables and figure legends) and contain no more than one figure or table and up to 10 essential references beyond those describing statistical procedures, psychometric instruments and diagnostic guidelines used in the study.

Case report

Case reports and series require up to 100 word abstract, and the length should not exceed 1000 words (excluding references, tables and figure legends). The written informed consent of the individuals must be obtained and submitted with the manuscript. Please refer to patient consent and confidentiality paragraph for further detail. In general, case studies are published in the *JGCR* only if the authors can present evidence that the case report is of fundamental significance and it is unlikely that the scientific value of the communication could be achieved using any other methodology.

Review

Systematic and narrative review articles should be structured in the same way as research article, but the length of these may vary considerably, as will the number of references. It requires a structured abstract like that of research articles.

Short review

These articles focus on highly topical issues based on evidence. Professional perspectives, viewpoints, commentary and opinion are included here. It can also include clinical review relevant to the practitioners. These articles are usually more broad-based than editorials. They can include tables and figures. Usual length is around 1500 words (excluding references) with an unstructured abstract up to 100 words.

Editorial

Editorials require an unstructured summary of one paragraph, not exceeding 50 words. Editorials should not exceed 1000 words and may contain no more than one figure or table and up to 10 essential references.

Letters to the Editor

Letters may be submitted either as responses to published articles, to inform about particular situation or raise pertinent issues, as expert opinion or as general letters to the Editor. Letters may be up to 400 words in length with a maximum of 5 references.

Insight

These articles include variety of topics which may reflect an individual perception, involvement or contribution to geriatric care. It can include good practice examples, inspirational experiences and highlight neglected areas. Essays in descriptive prose can be submitted on any topic related to geriatric care. These are usually written by a single author but a second author may be included occasionally. The length of the articles may vary considerably depending upon the topic and may be up to

2000 words excluding references. An unstructured summary of around 100 words is preferred but not mandatory. Use of subheadings is encouraged.

First person account

In first person accounts *JGCR* publishes experiences of older persons or their care providers about the care and concerns of the elderly, that can be considered significant and provide learning points for others.

Columns

These comprise a range of materials considered to be of interest to readers of the *JGCR*. This section includes reviews on book, film or web resources as short articles up to 400 words. Some other examples include News regarding developments that can influence the care of elderly, poems, paintings, photographs, quotations, information about important internet links, etc. These articles are published individually or as fillers at the end of other articles where space allows.

Preparation of Manuscripts

Prepare article in Word, A4 size page, with 1 inch margin, double spaced throughout.

Article information page

1. Type of manuscript:
2. Title of the article: Brief and relevant
3. Name of all the authors: (underline Last name)
4. Details of authors: academic degrees, professional position, institutional affiliations, professional address, email
5. Corresponding author: name, address, phone, e-mail and ORCID
6. Contributions of each author:
7. Word count for abstract:
8. Word count for the text (excluding references):
9. Number of tables: (total number of tables and figures should not be more than 10, preferably less than 5.)
10. Number of photographs/images (to be provided separately in high quality JPEG files):
11. Acknowledgement:
12. Competing interests:
13. Funding
14. Suggested Reviewers Up to 3, (not from authors' institution). Name, Position, Institution and Email

No identifiable details beyond this page.

Article Text pages

The article text pages do not contain any identifiable information, for a blind review. It should contain: Title of the article, Abstract and Key words (depending upon the article type) and the Text of the article. Please refer to article types for detail information. As a general rule,

please have an Introduction and Conclusion subheadings whenever possible along with other required subheadings.

References

Authors are responsible for checking all references for accuracy and relevance in advance of submission. All references should be given in superscripted number in the order they appear in the text. Place superscript reference number after commas and full stops, unless the superscript is attached to authors name or title of book/database. At the end of the article the full list of references should follow the [ICMJE style](#). If there are more than six authors, the first six should be named, followed by 'et al'.

Example of journal articles:

The authors' names are followed by the full title of the article; the journal title abbreviated according to the PubMed; the year of publication; the volume number; (issue number in bracket); and the first and last page numbers:

1. Singh SP, Singh V, Kar N, Chan K. Efficacy of antidepressants in treating the negative symptoms of chronic schizophrenia: meta-analysis. *Br J Psychiatry*. 2010; 197(3): 174-9.

References to books should give the names of any editors, place of publication, editor, and year. Examples are shown below.

2. Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. *Medical microbiology*. 4th ed. St. Louis: Mosby; 2002.

3. Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. *The genetic basis of human cancer*. New York: McGraw-Hill; 2002. p. 93-113.

4. Foley KM, Gelband H, editors. *Improving palliative care for cancer* [Internet]. Washington: National Academy Press; 2001 [cited 2002 Jul 9]. Available from: <http://www.nap.edu/books/0309074029/html/>.

5. Cancer-Pain.org [Internet]. New York: Association of Cancer Online Resources, Inc.; c2000-01 [updated 2002 May 16; cited 2002 Jul 9]. Available from: <http://www.cancer-pain.org/>.

Personal communications need written authorisation (email is acceptable); they should not be included in the reference list. Unpublished doctoral theses may be cited (please state department or faculty, university and degree). No other citation of unpublished work, including unpublished conference presentations, is permissible. Further information about the references can be availed from http://www.nlm.nih.gov/bsd/uniform_requirements.html

Tables

Tables should be numbered and have an appropriate heading. The tables should be mentioned in the text such as Table 1 and the desired position in the manuscript should be indicated. Information in tables must not be duplicated in the text. The heading of the table, together

with any footnotes or comments, should be self-explanatory. The table should be placed at the end of the manuscript after references, each in a separate page. Authors must obtain written permission from the original publisher if they intend to use tables from other sources, and due acknowledgement should be made in a footnote to the table.

Figures

Figures must be of high quality and provided in JPEG files separately. They should be clearly numbered and include an explanatory legend. Legends can be provided at the end of the article after the references. All figures should be mentioned in the text (such as Fig 1) and the desired position of the figure in the manuscript should be indicated. Authors must obtain written permission from the original publisher if they intend to use figures from other sources, and due acknowledgement should be made in the legend.

For ease of formatting please use the available article template.

Abbreviations, units and footnotes

All abbreviations must be spelt out on first usage and only widely recognized abbreviations will be permitted. Abbreviations usage should be consistent throughout the article. Use abbreviations sparingly; consider using one if it is repeated more than three times.

The generic names of drugs should be used.

Generally, SI units should be used; where they are not, the SI equivalent should be included in parentheses.

Footnotes are not allowed, except table footnotes.

Statistics

Methods of statistical analysis should be described in language that is comprehensible to most readers. Raw data for the studies may be asked at any time up to 5 years after publication of research in the *JGCR* and the authors are suggested to keep these safe.

Proofs

A proof will be sent to the corresponding author of an article which should be sent back within 7 days.

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GeriCaRe (Geriatric Care and Research Organisation) is involved in the care of the elderly and research in various aspects relevant to old age with an overarching aim of improving the quality of life of older adults. It endeavours to provide evidence based information for caregivers, elderly and the health care professionals about age related issues and to support life-long-learning through educational programmes for professionals and carers..

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