The dangers of delirium

Expanding on recent findings from a large clinical study, Dr Monidipa Dasgupta’s analysis on the outcomes of delirium indicates possible measures to address this mysterious disorder

What led to your research focus on delirium?

During my medical residency training, I developed an interest in working with older people. They have unique conditions that encompass multiple disciplines, possess a lot of life experience and display maturity, especially when it comes to dealing with life’s challenges. From the outset, most of my clinical practice has involved hospital-based medicine for elderly people. My interest arose directly from a desire to provide good and evidence-based care for patients – the research questions I address stem directly from my clinical experiences.

Can you outline the changes that occur when an individual becomes delirious?

A delirious individual may experience visual hallucinations, disordered sleep, disorientation, failure to recognize loved ones, or be completely unaware of his/her environment. A hallmark of delirium is an impairment in attention; affected individuals will experience difficulty in attending to stimuli or perceive abnormal stimuli.

Why do you think so little is understood about delirium?

Delirium reflects a brain function disorder, but measurements of biologic brain function are difficult to perform, especially given the medical instability of many delirious patients. Delirium frequently accompanies acute illnesses, but the reasons for this remain unknown. The brain appears to be vulnerable to how the rest of the body functions. In addition, older people present differently compared with younger patients, but no one understands why. It is postulated that accumulated deficits may be a cause.

The concept of delirium has had to evolve: historically, it was considered a reversible disorder that could be resolved by treatment of an underlying illness. Yet with present-day populations living longer and with more chronic illnesses, the prognosis has changed. Lack of understanding of delirium is thus a reflection of its ubiquity yet heterogeneity in diverse populations, difficulties in studying brain function in acutely ill individuals, and the evolution of medical practice (and therefore the natural history of delirium).

You conducted the largest outcome study of delirium in acutely hospitalised medical inpatients. What were your key findings on adverse outcomes after delirium?

Advanced age and dependence on others in daily living are some baseline factors we found to be associated with poor recovery. The presence of hypoxia early on and acute renal failure were also associated with poor prognosis, suggesting that brain function and recovery may be particularly susceptible to lack of oxygen, toxins or dehydration.

Do you face any challenges in your research?

There are multiple obstacles with enrolling hospitalised patients into studies, including the potential medical instability of the individual, and the numerous additional tests that may be administered. Other difficulties include inadequate funding and support within the field, and lack of delirium researchers in general.

Furthermore, the ethics of conducting studies on cognitively impaired individuals requires informed consent from a substitute decision maker. Unfortunately, as delirious individuals are often very unwell, substitute decision makers may be reluctant for them to participate in such studies. Privacy legislation also necessitates that only individuals within the circle of care are allowed to approach potential participants. Even when a delirious individual does participate, they may have real practical difficulties with extensive testing.

We approach these challenges by recruiting patients over a long period, making multiple attempts to both contact substitute decision makers and visit study participants, appointing a practicing clinician based at the hospital to approach potential participants, and devising a methodology that is minimally invasive and relatively easy for participants.

How can the prognosis of delirium in older inpatients be improved?

Some interventions that could be attempted include paying special attention to mobility difficulties, swallowing or nutritional issues, hydration status and oxygen levels in delirious individuals.

Our results suggest that even after discharge from hospital, delirious individuals remain at high risk of deteriorating. Perhaps special efforts at rehabilitating or assessing them after discharge may help improve outcomes. Much about this still remains unknown, however, and there is a need for further intervention studies in actively delirious individuals.
Hospitalisation syndrome

New findings show an alarmingly poor prognosis for delirium among hospitalised older people. Researchers from the University of Western Ontario are working on several strategies that hospitals could adopt to reduce the condition’s burden of mortality and morbidity.

Hospitals are not designed to be comfortable spaces. Their high noise levels, clinical aromas, bright artificial lighting and functional decor make them confusing and unsettling environments at the best of times. When a person is unwell and of advanced age, simply being admitted to hospital is now known to heighten the risk of a life-threatening condition, even when prior to admission they were alert and independently capable. Hospital-induced delirium, a common health problem for hospitalised people over 65 years old, is now known to increase the likelihood of mortality within a year.

Delirium takes many forms, but is generally described as an acute change in mental state characterised by disorientation, confusion, an altered state of consciousness, inability to focus and, sometimes, hallucinations. Unfortunately, as the symptoms can be similar to conditions such as dementia, mania or depression, it is often assumed to be the baseline condition of an elderly person prior to admission, and may therefore go unrecognised. This problem is enhanced by the fact that episodes can fluctuate over time.

Delirium substantially prolongs the average length of an older person’s hospital stay. It is also associated with longer-term cognitive decline. If it persists, the affected individual may require permanent institutionalisation in a nursing facility. As a consequence, the burden to healthcare services is rising significantly alongside an ageing population.

Gaps in knowledge
There have been various factors posited for the onset of delirium: underlying conditions, the disorienting nature of hospitals, disrupted sleep patterns, anxiety about displacement from home or separation from family and pets, lack of access to hearing aids or dentures, or reactions to new medications – but the causes remain unclear. Similarly, the
Dasgupta’s findings show that, even where patients are considered to be at low risk of poor prognosis, there is still an estimated 50 per cent chance of poor recovery.

INVESTIGATING OUTCOMES

Dasgupta’s study is the largest yet of delirium outcomes in medical in-patients, and was the first to look primarily at multiple predictors of poor recovery. Between October 2009 and July 2011, 1,235 patients aged 70 and over – and who had previously been admitted to medical teaching units at the University and Victoria Hospitals attached to the London Health Science Centre in Ontario – were screened for delirium.

As the condition can last for up to two months, Dasgupta followed patients in hospital and for three months after hospital discharge. Screenings for confusion, alertness and agitation were carried out every two days, either three times after enrolment or until discharge, using the Short Portable Mental Status Questionnaire. Further assessments were carried out if family members, caregivers or hospital staff had noticed changes in the patient’s mental state or behaviour, and where signs of delirium had been found. Additional tests took the form of structured interviews. In total, 29 per cent of patients were found to have delirium. Follow-up interviews with caregivers then gathered additional data on those affected.

WORSE THAN ANTICIPATED

Dasgupta’s team took into account multiple variables associated with prolongation of delirium, including a history of dementia and hypoactive symptoms, as well as basic demographics and clinically relevant factors, such as severity of illness, baseline frailty and duration of confusion. Having separated one-third of the participants into a validation group, the researchers applied various statistical techniques to analyse the data and model the patients’ outcomes.

Ultimately, the rate of recovery after delirium was low – less than one-third – and of those participants who had been discharged from hospital, nearly 50 per cent failed to recover well. Overall, the outcome for 69 per cent of the participants was extremely poor: 54 (15 per cent) died in hospital and one after discharge, 136 were institutionalised and 46 had declined functionally after a median period of 103 days.

Analysis by Dasgupta’s team points to a number of risk factors for poor recovery after delirium: old age, dependence on others for functional assistance with daily living, acute renal failure, hypoxia and delirium severity. Surprisingly, however, Dasgupta’s findings show that, even where patients are considered to be at low risk of poor prognosis, there is still an estimated 50 per cent chance of poor recovery. They also suggest that higher delirium severity indicates more pronounced acute brain malfunction, and that the delirious brain may be particularly vulnerable to the effects of hypoxia and renal failure. “It is curious how a biologic process in a different organ system can lead to changes in brain functioning,” Dasgupta reflects. “No one pathophysiological process or model can sufficiently describe why delirium occurs.” She points to the need for further examination of delirium, such as in outpatient populations, to assess whether factors not associated with in-patient or post-discharge conditions impact functional recovery, and a need for further large studies to better understand prognostic factors. “Interventions may need to be tailored to different categories of delirium. Prognosis may be a way to identify distinct categories,” she adds.

There is still more that needs to be done to prevent hospital-induced delirium in older people. Institutions should routinely seek to improve the early hospitalisation experience, as well as their management of elderly patients. Despite this, the results of Dasgupta’s research posit that trying to prevent hypoxia and renal failure, optimising nutrition and mobility, and being vigilant for other concurrent illnesses may possibly improve outcomes in delirious individuals – although this remains to be shown.