Journal of the Neurological Sciences 348 (2015) 6–17

Contents lists available at ScienceDirect

Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Review article

The prevalence and clinical manifestations of delirium in sub-Saharan Africa: A systematic review with inferences

S.-M. Paddick [a,b], R.N. Kalaria [a,*], E.B. Mukaetova-Ladinska [a]

[a] Institute for Ageing and Health, Newcastle University, Campus for Ageing & Vitality, Newcastle upon Tyne NE4 5PL, UK
[b] Northumbria Healthcare NHS Foundation Trust, North Shields, UK

ARTICLE INFO

Article history:
Received 29 July 2014
Received in revised form 30 September 2014
Accepted 27 October 2014
Available online 8 November 2014

Keywords:
Delirium
Dementia
HIV
Risk factors
Stroke
Sub-Saharan Africa

ABSTRACT

Background: In high-income countries with ageing populations, delirium is most prevalent in older adults and in palliative and intensive care settings. The prevalence and aetiology of delirium are likely to differ in low income countries, including sub-Saharan Africa (SSA), due to different population demographics, disease burden and exposure to pathogens. We reviewed published literature relating to the prevalence, clinical features and underlying causes of delirium in SSA and compare this with that published in high-income countries in order to identify knowledge and clinical service gaps, and priorities for further research.
Methods: We performed a narrative review by comprehensively searching the following databases: Medline, PsychInfo, Embase and PubMed. Studies published between January 1 1975 and December 31 2013 in all languages, including the terms 'delirium', 'acute brain syndrome', 'organic brain syndrome', or 'acute confusion' originating from SSA were included. In addition, reference lists of included articles and online databases of African medical literature were hand-searched. We also included case series and case reports due to paucity of published studies.
Results: We identified a total of 46 relevant studies. Delirium was the main focus of only one cross-sectional study, whereas most included delirium in studies on neuropsychiatric conditions. Only two studies reported prevalence in older adults. Most studies reported very low (<2%) delirium prevalence, whereas delirium in psychiatric inpatient and outpatient settings was higher than expected (18.2%–29.9%). Descriptive studies of 'bouffee delirante' from psychiatry settings were often describing delirium. Infection and HIV seropositivity were common associations of delirium throughout these studies. There were no studies of intensive, critical or surgical care settings or of management strategies.
Conclusions: We currently know very little about the prevalence, presentation and aetiology of delirium in developing countries. This knowledge gap should be tackled with some urgency, in order to address questions of screening, diagnosis, prevention and management in this setting.

Contents

* Corresponding author at: Institute for Ageing and Health, NIHR Biomedical Research Building, Newcastle University, Campus for Ageing & Vitality, Newcastle upon Tyne NE4 5PL, UK. Tel.:+44 191 248 1352; fax:+44 191 248 1301.
E-mail address: r.n.kalaria@ncl.ac.uk (R.N. Kalaria).

http://dx.doi.org/10.1016/j.jns.2014.10.034
0022-510X/

1. Introduction

Delirium is a neuropsychiatric syndrome which is rapidly becoming a public health priority in high-income countries with ageing populations [1–3]. An episode of delirium is associated with adverse short and long term outcomes, including elevated risk of mortality [4–6], longer term cognitive impairment [7,8], institutionalisation [6] and increased healthcare costs [9]. These outcomes occur in all age groups [10], although older people are more affected [6,11]. Timely identification is crucial, with mortality increasing by 11% for every 48 h of ongoing delirium in an older person [12]. Up to two thirds of delirium cases remain undiagnosed [5], largely due to symptom variation causing difficulties for non-specialists [13].

In hospital inpatient studies, delirium is reported in up to 31% of all medical admissions [5], in two thirds of hospitalised older adults [2] and in more than half of emergency orthopaedic surgical patients [14], and those with an acute stroke [15]. In intensive and palliative care settings, the prevalence is substantially higher (80% [4] and 88% [16], respectively). In contrast, the community prevalence of delirium has been estimated at 0.4% in adults aged 55 and younger [17] and 1–2% in older people [18], whereas the prevalence in children is unclear with data limited to case reports and small case series [19].

Although described for over 2000 years, delirium still remains poorly understood [13,20–22]. The delirium 'brain failure' is thought to result from disrupted neurotransmission in a vulnerable individual following an insult to brain function [3,20,23]. Amongst numerous insults causing delirium, inflammation and infection are most consistent aetiological factors in all settings [3,21]. The most vulnerable are those with decreased cognitive reserve, including older people, and especially those with dementia [2,11].

Dramatic changes in life expectancy have occurred over the past century largely due to reductions in mortality from an infectious disease [24]. In high-income countries, those aged 65 and over now make up 13–17.5% of the population in the USA and Europe, respectively. Mortality from an infectious disease has been superseded by an increasing burden of a chronic disease [25] so that in high-income countries, cardiovascular disease, cancer and stroke are now the major causes of mortality and morbidity [26]. As the population ages, the number of people with dementia has also increased, with 5.4–6.4% of those aged 65 and over in Europe and the USA having dementia [27]. These demographic changes all contribute to a high number of older people vulnerable to delirium.

In tandem with this, incidence of infectious disease is again increasing by 4.8% per annum [24]. Much of this increase is due to food borne and antibiotic-resistant organisms [24]. Older people are more susceptible to these infections and have an estimated three fold increased risk of community acquired pneumonia and twenty fold higher risk of urinary tract infection [28]. Susceptibility to tuberculosis (TB) and hospital and institutionally acquired infections is similarly increased [28]. These higher rates of infection are likely to lead to corresponding increases in delirium.

In sub-Saharan Africa (SSA), population demographics differ markedly from those in high-income countries. In 1900, life expectancy in the USA was 47 years, and pneumonia, TB and diarrhoea were the three most common causes of mortality [24]. This situation is not dissimilar to that in SSA today, where the current life expectancy projections are 63 for women and 58 for men [26]. However, by 2030 more than three quarters of the elderly population worldwide will live in developing countries [29]. Already there are an estimated 2.1 million people with dementia in SSA and this will increase by 70–90% by 2030 [30]. Prevalence of non-communicable diseases is also increasing with a third of deaths now attributed to them [26].

Nevertheless, diarrhoea, lower respiratory tract infection, TB, malaria and HIV/AIDS remain the most common causes of death in SSA [26]. The vast majority of those with HIV/AIDS live in SSA and although life expectancy has increased in all countries of SSA, HIV/AIDS has resulted in a reversal of demographic transition in some of the worst affected countries [31]. Tropical diseases, especially that group of 17 infectious diseases known as the 'neglected tropical diseases' remain prevalent [32]. In addition, increasing urbanisation is leading to increases in infectious diseases due to poor sanitation, increased transmission of pathogens and inability of health systems to keep pace with development [33]. The older population in developing countries is at increased risk of infection, but is a group about which surprisingly little is known [34]. It is likely that delirium is also prevalent in SSA, but presentation and clinical features may differ due to differing disease burden(s).

We therefore reviewed the published literature relating to the prevalence, clinical features and underlying causes of delirium in SSA. We compare the literature findings with that published in high-income countries and highlight potential knowledge gaps and priorities for further research and clinical service developments.

2. Methods

This narrative review was based on a comprehensive search that included Medline, PsychInfo, Embase and PubMed databases for studies published between January 1 1975 and December 31 2013. To ensure a global perspective, articles in English, French, Spanish, German and Russian were reviewed for potential inclusion. Articles not in English were translated by S-MP (Spanish and French) and EML (German and Russian). The key words used in the current search were: 'delirium', 'acute brain syndrome', 'organic brain syndrome', or 'acute confusion' (Box 1). All countries and regions of SSA were included as keyword and title search terms using the United Nations list of countries.

In addition, reference lists of selected articles were hand searched for potentially relevant articles. Content lists of African medical journals including the East African Medical Journal, Tropical Doctor and the African Journal of Psychiatry were also hand-searched. Due to the small number of articles retrieved, case reports and case series were included where delirium was a major focus of the report. All age groups and healthcare settings were included.

All abstracts were critically reviewed and the full text of relevant articles was obtained. Where there was doubt regarding relevance, particularly in cases of differing nomenclature, the full text was also sought. All abstracts and articles were initially reviewed by S-MP and in cases of doubt these were reviewed by EBM-L and a consensus decision reached. Criteria for inclusion were that the article related directly to prevalence, phenomenology, aetiology, outcome and/or management of delirium. Articles were excluded if they related primarily to description of a specific disease where delirium was simply listed as a symptom, without further elaboration. This category consisted predominantly of case reports of uncommon infectious diseases where delirium might occur. There was no requirement for delirium to be diagnosed using standard criteria, provided there was