The (Palliative) care of Huntington's disease

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Palliative care services are increasingly becoming involved in the care of neurodegenerative disorders. Huntington's disease is a rare, familial disorder. Care from diagnosis is palliative. Though other specialist disciplines need to be involved in the care, palliative expertise and oversight is valuable and appreciated. Based upon a review of literature and three decades of clinical experience with over a hundred patients and their families this article provides an overview of the palliative care issues confronted when attending these patients and their families.

Keywords: Huntington's disease, Palliative care, Multidisciplinary team

Introduction

Huntington's disease (HD) is a progressive neurodegenerative disorder inherited as an autosomal dominant trait and classically constitutes a disorder of movement, cognition, and behaviour. The prevalence of this invariably fatal disorder is around 1 in 10 000, with onset usually in middle age, and a disease duration of up to 20 years.[1] The number of cysteine–adenine–guanine (CAG) repeats correlates inversely with age at onset, this accounting for 50–69% of the variance of age of onset and genetic anticipation explains the expansion of unstable CAG repeats if inherited down the paternal line.[1] The rare juvenile onset HD may present with early and severe cognitive decline and hypokinetic movement disorder. The clinical decline of HD is relentless and essentially linear, however in our experience the functional decline is marked by periods of relative stability followed by steps of deterioration. The average age of death is 60 years.[2] There are no proven disease-modifying interventions. From diagnosis, including pre-symptomatic genetic testing, the management and care are palliative.

HD is currently incurable, but not untreatable, though treatment is solely symptomatic. For those affected the care is often fragmented, inadequate, and ill-informed.[3] A Cochrane review on HD therapeutics concluded in 2009 that 'no statement can be made regarding the best medical practice'.[4] Evidence-based medicine is wanting with respect to managing HD. Experienced-based expert opinion however supports the clinically apparent usefulness of a variety of biopsychosocial strategies and interventions.[5] There is a lack of consistency or pattern of HD symptoms – every patient seems to have individualized symptoms, even members of the same genetic pedigree, thus further adding complexity to the care of this disorder. The heredity nature of the disease is a further influence resulting in genetic guilt and dysfunction in families psychologically and socially scarred by generations of illness and premature, 'grotesque', deaths.

This review is based on the experience of the authors attending upwards of 100 HD patients and their families over three decades, some from pre-symptomatic testing until death. A large and flexible multidisciplinary team is required, the disease demanding focussed professional inputs at specific clinical phases. This team requires a clinical conductor who with the patient can orchestrate the timing of particular expertise. The emergence of Specialist Clinics for HD, world-wide networks, and patient information websites have been welcome recent advances.[1] The over-riding management principals are those of tailoring care to the individual by the preservation of capacities, the anticipating of clinical and functional problems, symptom-relief, non-abandonment and the maintenance of quality of remaining life.

Clinical management

Motor disability

Chorea is a feature in over 90% of HD patients.[6] It is often incorporated into voluntary movements and

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appears semi-purposeful. HD patients rarely complain of their chorea or are even aware of it.[7] The movements appear bizarre and uncomfortable to the observer, and may attract unfair accusations of intoxication, but are not definitely associated with increase of falls, weight loss or proven deterioration of quality of life.[5] With disease progression chorea tends towards athetosis, bradykinesia, myoclonus, dystonia and rigidity, though in the juvenile, Westpahl variant, these features appear early. If chorea is bothersome (as it can be in wheelchair confined patients), interfering with eating or drinking, or socially stigmatizing, medication may be considered.[8] Medication will not obliterate the chorea, at best they may reduce the severity. Tetrabenazine is the only treatment shown to significantly reduce chorea in a randomized controlled trial.[4] Contraindications include depression, suicidality, and dysphagia. Tetrabenazine's efficacy tends to fade over time and non-compliance can be an issue. Amantadine, riluzole, and nabilone lack anti-choreiform efficacy but low dosage anti-psychotic agents may reduce chorea to some degree.[5] Haloperidol, olanzapine, clozapine, and aripiprazole have some clinician support.[5] Benzodiazepines may ease late occurring dystonic symptoms, anti-convulsants can contain myoclonus, and botulinum toxin injections may relieve focal dystonias. Dopaminergic agonists may warrant a clinical trial in the late rigid-akinetic stage of the illness.[5] However, medications invariably risk adverse effects, and HD patients seem prone to these problems, thus cautious and conservative prescribing is advocated.

Chorea is functionally less disabling than impairments of voluntary movement such as uncoordinated, inaccurate, clumsy, slowed fine motor movements, and gait disturbances. Falls become a major risk. Ensuring a safe, uncluttered environment, free of obstacles and hazards, pragmatic clothing and foot-wear, walking aids, wheelchairs with a lap-tray, and reclining chairs may all be of value, though rarely can falls be entirely prevented. Antipsychotic medications can aggravate the gait,[9] and sedating adverse effects of medications likewise. The ability to walk is eventually lost and confinement to wheelchair and bed eases the falls risk.

Cognitive dysfunction

It is not the movement symptoms but the non-motor features of HD that have the biggest impact on the patient's life.[10] The dementia of HD manifests as a frontal-subcortical dementia with bradyphrenia, apathy, and features of executive dysfunction, before evolving into a more global dementia in late disease.[11] Executive dysfunctions such as problems with planning, organizing and scheduling day-to-day events, inflexibility of thought and difficulties switching cognitive sets are destructively influential on the individual and those with whom they live. Memory deficits, particularly in regard to the retrieval of information, occur and attentional difficulties may limit the acquisition of new information. Tasks requiring psychomotor or visuospatial processing are impaired early and deteriorate at a more rapid rate than does memory impairment.[12] Dementia is not invariable, but occurs in 66%, and its features are inconsistent,[13] thus the cognitive impairments have been described as a dysmentia rather than a dementia. Anosognosia (or lack of self-awareness) may result in the patient overestimating abilities and underestimating disabilities. It is not uncommon for a patient to answer 'I'm fine' to all queries, while the carer looks on despairingly.[14] Apathy and major problems initiating activities and thoughts are described in about 40–50%.[15] Apathy is highly correlated with the duration of disease and is independent of mood.[16] Apathy may coexist with irritability particularly if the apathetic state is interrupted or challenged. Labelling apathy as laziness is counterproductive. Loss of motivation, enthusiasm, and interest are progressive and very disabling symptoms of HD. Any minor change in routine threatens organic orderliness and may provoke angry responses. The fatigue associated with a damaged nervous system can cripple performance in the later stages. In some, disinhibition is a prominent feature and most eventually have major difficulties delaying gratification and being patient, behaviours which may unfairly be described as demanding and demonstrative. The inability to endure waiting for something desired is a major issue toward the later stages of the illness. Only individualized, attentive nursing care prevents these tantrums and distress.

Altering behaviour is more difficult, but not impossible, for those dementing. Cohesive and consistent environmental influences can gradually mould behaviours, or at least discourage some. A structured system to ensure that desired behaviours are reinforced by rewards and undesired behaviours are not inadvertently reinforced by enhanced attention is the basis of behavioural modification programmes. A cycle of escalating behaviour may sometimes be broken by allowing frequent opportunities to access the desired reward without first displaying the behaviour.[17] The most frequent and severe challenging behaviours occur in those who have no meaningful relationships. Thus when a person is without family or friends, the relationship with staff and members of the multidisciplinary team is crucial to managing behaviours.[17] Identifying circumstances liable to precipitate irritability and avoiding confrontations are helpful. Confronting irritability usually amplifies it, and diplomatic defusing can be difficult. Delivering ultimatums are rarely successful. Fierce cajoling tends to result in

even more determined resistance and irritability. Simplifying the environmental and interpersonal demands, orchestrating order and routine to avoid surprise, and allowing the time for slower cognitive processing, can reduce the possibilities of irritable and defensive reactions. A common difficulty is that of initiation, but once an activity is under way it may be able to be sustained. The capacity to rapidly assimilate information diminishes and fretful panic responses occur when overwhelmed. Allowing and enforcing routine reduces the probability of these catastrophic reactions occurring. Memory lists and cues (perhaps facilitated with a cell phone) can prove very helpful. Inattention to acceptable personal hygiene standards tends to be an early and enduring symptom of HD. Impaired recognition of facial expressions of disgust has been demonstrated in persons with HD.[18] Not only do the motor and coordinating difficulties compound showering and oral hygiene,[19] the desirability to cleanse is faulty for recognition of disgust is the major motivating factor for personal cleanliness.[20] Surreptitious supervision may encourage better personal hygiene care. As cognitive skills deteriorate allowing decision-making may require some direction and subtle guidance. Experience has shown that offering an 'illusion of choice' is a powerful strategy for initiating a desired task, e.g. 'would you like a shower now? Or shall I come back in 5 minutes?' Maintaining self-esteem in the face of the insult of dementia is difficult.

Clinical trials of cholinesterase inhibitors (donepezil, rivastigmine), the atypical stimulant, modafinil, and various antidepressants have not shown efficacy.[5] Promoting autonomy, dignity, meaningful social interactions, and functional competence while ensuring safety and comfort are the ideal management goals, but are often difficult to achieve consistently as the nervous system is progressively destroyed.[21] Balancing safety concerns, such as the risks of falls and aspiration, against allowing independence and choice challenges all who care for these patients. The one sad, but also reassuring, aspect of care is that the current management difficulties will not be lasting but will be replaced by other, but different, and possibly easier to manage, symptoms.

Psychiatric issues

These features also have a greater impact on health-related quality of life than motor problems do.[22] Genetic pre-symptomatic testing, though only initiated by a minority, can paradoxically result in major adjustment issues for those gene-negative, for having presumed carrier-status suddenly their life's opportunities are radically altered. Psychological and social support needs to be available for all. The symptoms of HD often present when family life is complex due to child-rearing and career development stressors, and children often describe the disorder as splitting the family apart.[23] Affected carriers are generally familiar with the fearful disease, having witnessed it in relatives, and subtle early symptoms of HD tend to encourage denial. Presentations are invariably avoided and late, others initially recognizing the symptoms. This denial is initially psychogenic but as the disease progresses it becomes an inflexible feature of the degenerating nervous system.

The suicide rate in HD is about eight times more common than that of the general population.[1] The greatest period of risk for suicidal behaviour occurs early, around the time the first symptoms become apparent or these symptoms result in life-style changes such as loss of employment or loss of driving privileges.[24] Depression is reported in 40%,[25] but may be masked and difficult to differentiate from irritability, apathy and grief. Consideration might be given to prophylactic SSRI or SNRI introduction, these generally being tolerable antidepressant medications. Psychosis, usually paranoia and occasionally associated with visual hallucinations in more advanced HD, is reported in 30%.[25] Though not particularly amenable to medication it usually demands a concerted trial of haloperidol or olanzapine as psychosis is so disruptive for all concerned. Irritability and temper tantrums are particularly troublesome features occurring in up to one third of HD patients.[26] Hunger, fatigue, pain, boredom, and the frustrations of impaired communications may enhance irritability.[27] Explosive irritability may be eased by an antipsychotic or anticonvulsant, such as sodium valproate. Obsessive and compulsive symptoms are present in up to 50%, contamination obsessions reported in 22%, yet another reason for the introduction of serotonergic medications.[28] Anxiety is ever-present, brief use of benzodiazepines and maintenance with an SSRI, may augment psychological strategies which likely become not feasible as cognitive functioning deteriorates. Though various forms of psychotropic medications are invariably utilized during the illness journey, with the exception of the antidepressants their efficacy remains questionable.

Cachexia and dysphagia

Unintended weight loss is usual and unremitting in the later stages. Weight loss and chorea are only weakly correlated. The pathogenesis of this cachexia is uncertain, but probably relates to hypothalamic pathology.[1] Higher sedentary energy expenditure, which is correlated with the severity of the movement disorder, has been demonstrated,[29] swallowing difficulties can contribute, but even with increased dietary intake weight loss occurs.[30] High calorie diets of at least up to 5–6000 kcal/day are advisable (though expensive), but

probably do not slow progression.[31] Weight loss amplifies the intensity of the movement disorders of HD. Weight gain itself may reduce chorea and improve alertness and responsiveness particularly in the late stages.[27]

Dysphagia is a consequence of motor, respiratory, and cognitive dysfunctions. The motor dysfunctions include difficulties closing the mouth, erratic chewing, difficulties coordinating the sequence of swallowing and clearing the mouth of excess food after each swallow, and regurgitation of contents. Poor respiratory control, aerophagia, mucus retention, and drooling all contribute to the difficulties.[14] Impaired judgment (and impulsivity) may lead to an increased eating rate, inappropriate food selection, food gulping, and 'cramming' resulting in inefficient hurry of food and fluids into the gullet. Dry mouth secondary to neuroleptics and antidepressant medications further compound these problems. Choking, aspiration, and asphyxia are risks of late-stage HD. SLT assessment and orchestrated trials of eating and video-fluoroscopy may be useful. Supervision may be required to encourage slow eating. Small sized spoons slow the rate of feeding. Lack of other distractions at meal times is important. Meals need to be silent occasions. Having the patient sit upright during and after meals, eat slowly and deliberately, and clear the mouth before the next bite, may lessen the chances of aspiration or choking.[27] Food needs to be prepared in appropriate size and texture, and eventually as thickened fluids. Soft, smooth textured food and thickened liquids are safest in the later stages. Dry, crumbly and chewy foods and clear fluids are the most difficult to swallow safely. Avoiding putting two textures in the mouth at the same time can transform meal times for patients.[14] Aids such as late grip utensils, non-slip plates, and a straw for liquids can assist. A low dosage short-acting benzodiazepine such as midazolam can for some improve hurried swallowing if given before meals, particularly if anxiety (about choking) is a particular issue. The presence of a non-distracting attendant (with knowledge of the Heimlich manoeuvre) is preferable. A stage comes when the patient needs to be fed by another and though this requires considerable patience on the part of the carer, safety is enhanced, though at the expense of autonomy. Compromises may need to be negotiated such as the patient eating some things assisted and some unassisted. The use of percutaneous endoscopic gastrostomy (PEG) feeding is fraught with medical and ethical issues. In advanced dementia patients and there is no evidence that PEG tubes prevent aspiration, malnutrition, or pressure ulcer formation, nor do they improve functional status or quality of life.[32] Placing PEG tubing has surgical complications, the site is prone to superficial infection, and accidental or agitated self-removal is possible. Suffering may be enhanced and quantity of life not prolonged, yet approximately 30% of all PEG tubes are placed in patients with dementia,[32] and once placed it is a more difficult decision to remove it. Specific studies have not been performed on HD patients in whom early PEG insertion might delay cachexia.

Dental care is important.[19] Neglect of oral health caused by the motor and cognitive changes is inevitable and early prophylactic dental care is preferable. Electric tooth brushes, denture alterations necessitated by cachexia, and simple oral hygiene education may limit subsequent speaking and feeding complications.

Communication difficulties

Motor speech defects affect 50% in the early stages,[33] and progressive dysarthria compromises communication. Involvement of laryngeal and respiratory muscles results in disturbances of rate and rhythm of speech. Language tasks (as opposed to speech itself) are unaffected,[10] though initiation of speech becomes slow and abulic. Simple syntax such as shorter utterances, simple sentences, and single words should encouraged. The patient should be asked to speak slowly; the environment needs to be quiet, and the listener patient, to ensure the greatest prospect of being comprehended. Spelling out a particular word, cues to facilitate word-finding, simple yes–no interactions, the use of communication boards and various forms of non-verbal communication may be of value at certain stages of HD but nothing maintains its usefulness for long as the HD progresses to a deeper level. Our experience with augmentative communication devices is that the person with HD quickly loses the ability to initiate communication. These devices have proved useful for the listener in stimulating conversation and in engaging children with their HD family member. Sounds such as 'L' and 'N' are particularly difficult to enunciate. An absence of a reply may represent abulia, rather than 'no'. Neuroleptic medications can worsen the dysarthria.[27] Eventually speech becomes incomprehensible, then anarthric. Comprehension is generally retained well after the loss of speech, so assuming understanding is respectful and wise.

Sleep, substances and continence problems

HD patients have profound circadian rhythm disturbances.[34] Hypnotics, even combinations of stimulants and hypnotics can be of benefit,[1] though major disruptions such as delayed phase sleep dysfunctions often defy pharmacology.

With progressive motor and cognitive changes smoking becomes increasingly hazardous to the patient and others. Though depriving those of such a

pleasure at this stage of life raises ethical concerns. Alcohol in the early stages may mute abnormal movements and adjustment pangs but also with emerging dementia risks disinhibited behaviours, falls, incontinence, vomiting, and accidents.

Early onset sympathetic hyperactivity and later-stage autonomic hypofunction have been described in HD.1 Detruser muscle hyper-reflexia, involuntary movements of the perineal musculature, and decreased mobility compromise continence in the latter stages of the disease.[9] Frequent toileting regimes and urinary catheterization can ease the burden of this care issue.

Carer burden

Carer burden is a major concern. Sadness, anger, frustration, a sense of inadequacy and the pure physical strain of attending to the reasonable and unreasonable demands of a HD patient takes a toll on carers. A major stressor for carers is the demanding and impatient behaviours, symptomatic of the dementia. The most difficult phase for carers is in the advanced stage when gratification cannot be delayed – attention to the wishes and wants are demanded instantaneously. The psychological morbidity of carers is substantial.[14] Respite care admissions, though often resisted by the patient, may allow a longer duration of community care. However residential care staff also can become 'burnt out' by the demands of care, an often encountered problem in residential care facilities exclusively for HD.

End of life care

Terminal care is usually within institutional care because of the very high dependency needs. A state of total, but alert, dependence eventuates. The nursing management shifts from a supportive, supervisory role to that of attending an increasingly physically dependant person requiring assistance with most activities of daily living. Preserving dignity, maintaining communication and providing comfort cares can be challenging and time-consuming. Urinary and bowel continence are lost. Behavioural regression may be extreme with screaming, demonstrative, food-refusal, and tantrum-like behaviours creating major management concerns. Whether these behaviours are expressive of pain it may be difficult to determine. Pain may arise from injury, spasticity, or dystonia and opioids may be indicated.[35,36] Diagnosing complicating delirium and depression is difficult. Disturbances of temperature regulation and blood pressure can be particularly severe in the later stages, presumably on the basis of hypothalamic involvement, though neuroleptic malignant syndrome needs to be excluded. Autonomic dysfunction such as excessive perspiration may not be symptomatic of fever. Retention of saliva and respiratory secretions may be reduced by anticholinergic agents such as hyoscine (though this risks delirium) or glycopyruvate. Mouth care is important. Episodes of aspiration pneumonia may be antibiotic responsive, though because of the pathology the infection will likely recur.

Death is from aspiration, infection and cachexia.[37] Pneumonia is often suggested to be the eventual cause of death in HD, though some gently drift into respiratory failure, possibly the consequence of a central rather than a peripheral mechanisms. Cardiac failure, probably because of autonomic nervous system failure, occurs in 30% (compared with only 2% in age-matched controls).[2] If still mobile, accidental head injuries can be a cause of death.[14] Theoretically, a dystonic storm or status dystonicus may be a cause of death in HD, though this has to date not been reported.

Conclusions

The management of neurodegenerative disorders, such as HD, is particularly challenging. Because of the evolving and diverse clinical needs it requires the commitment of a flexible multidisciplinary team, over many years. This process needs to be a proactive one in which symptom change is anticipated and crisis and surprise eliminated.[36] The basic tenets of care are informed psychological support and symptom management. The role of specialist palliative care medical and nursing staff is critical at various stages, predominantly for the sage advice and guidance that experience with terminal illness has provided them. It would not be inappropriate, but because of resourcing issues unlikely, that the clinician co-ordinating this team has palliative care expertise. However all health providers involved require a palliative approach to this, as yet, incurable disease.

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