CASE REPORT

The effect of a lollipop on vocally disruptive behavior in a patient with frontotemporal dementia: a case-study

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ABSTRACT

A problematic and disturbing behavior which can develop in people with dementia, is vocally disruptive behavior (VDB). To date, the study of VDB is underdeveloped and with only a limited knowledge base. Medications commonly used in VDB have limited benefits and specific risks in patients with dementia. This report details the case of a patient with frontotemporal dementia with VDB, which responded very well by providing a lollipop. Subsequently, we pose theory-based hypotheses in order to try to explain the beneficial effect of this intervention. This may contribute to a better understanding of VDB and possible treatment strategies.

Key words: young onset dementia, frontotemporal dementia, agitation, behavioral and psychological symptoms of dementia (BPSD)

Introduction

Frontotemporal lobar degeneration (FTLD) refers to a heterogeneous group of clinical syndromes associated with atrophy of the frontal and temporal lobe. The behavioral variant of frontotemporal dementia (FTD) is the most common subtype, which predominantly presents with progressive behavioral features (Neary et al., 1998). FTD is presented by slow progressive loss of personal and social awareness, disinhibition, mental rigidity, stereotyped behavior, impulsivity and distractibility (Neary et al., 1998). One of the problematic behaviors which can develop from these features, are repetitive and compulsive vocally disruptive behaviors (VDB), such as screaming, shouting, abusive language, perseveration and repetitive inappropriate requests. The descriptions of these behaviors are variable in type, intensity, causes and consequences. Therefore definitions are debatable. The prevalence of VDB varies between 10 to 40 percent in nursing home patients with dementia in general (Cariaga et al., 1991; Whall et al., 1992; Cohen-Mansfield et al., 2003). VDB can occur in a variety of dementia types (Cohen-Mansfield et al., 2003), and is possibly related to frontal or fronto-subcortical dysfunction (Nagaratnam et al., 2003). Yet, it remains unclear whether or not the type of dementia predicts the frequency and type of VDB (von Gunten et al., 2008). There is no literature of the association of VDB and FTD.

Despite the limited research on the occurrence of VDB, it is important to realize the severity and impact of the related behavior. Vocal activities producing excessive noise have been found to cause severe emotional distress for caregivers and other residents (Whall et al., 1992). Moreover, nursing staff expressed significantly more frustration, anxiety and anger towards patients with VDB and even distanced themselves from them (Draper et al., 2000). Therefore, it is important to understand this phenomenon and find solutions for the treatment and alleviation. The management of VDB requires a good understanding of the underlying factors that may trigger the behavior. Unfortunately, aetiologies and explanations for the occurrence of VDB still need to be established. Yet, Lai (1999) and Von Gunten et al. (2008) pose some comprehensive theories in their literature review. First, VDB has been hypothesized to be a consequence of the neurological damage associated with dementia syndromes such as Alzheimer’s disease, vascular dementia or FTD. The degenerative changes in frontal and temporal lobes lead to loss of inhibition, which could be related to vocal compulsivity (Nagaratnam et al., 2003). Second, VDB has been hypothesized to be an expression of physical discomfort or mental suffering (Cariaga
et al., 1991). Furthermore, patients with impaired communication skills manifested VDB at a greater frequency than those with preserved language (Matteau et al., 2003). Third, the occurrence of vocal activity could be related to sensory deprivation and social isolation (McMinn and Draper, 2005). Vocal activity may provide a source of self-stimulation to compensate for the low sensory input in nursing homes (Cariaga et al., 1991). Finally, VDB is assumed to be a method used to gain attention from staff and other residents. It may be attributed to specific unmet needs, such as a need to be fed, to be brought to the toilet or to be taken out of bed. Together with increasing cognitive decline the verbal behaviors become less textual and less related to specific needs (Cohen-Mansfield and Werner, 1997).

Examples of behavioral and environmental strategies commonly used to manage VDB are music therapy, positive reinforcement during quiet periods, multi-sensory therapy, one-to-one social interaction and treatment of underlying conditions such as pain and physical discomfort (Cohen-Mansfield and Werner, 1997; Lai, 1999; von Gunten et al., 2008). Yet, most important is the individualization of interventions for treating VDB, where some interventions are probably better suited to certain individuals than others (Cohen-Mansfield et al., 2007).

Case report

We present here a case history of a male patient that was admitted in 2009 on a Young Onset Dementia Special Care unit of a nursing home at the age of 63 year. His medical history mentioned gout, a low-grade non-Hodgkin’s lymphoma and chronic obstructive pulmonary disease that gives no current complaints. He consumed 5–10 units of alcohol per day during approximately 40 years. From 2007 onwards, he gradually developed agitated behavior and aggression towards family, showed a poor insight and awareness in his functional deficits, developed aphasia and showed obsessive, compulsive features. For instance, he destroyed several printers at his workplace, because he thought they didn’t function properly. Also, when his grandchildren visited him, he desperately wanted the same candy like them. These behavioral changes led to high caregiver burden with a forced institutionalization in 2009 on a psychiatric ward as a result. Considering the current consensus criteria for behavioral variant of FTD (Rascovsky et al., 2011), he showed several core diagnostic features to meet the criteria for possible behavioral variant of FTD. The present symptoms were early behavioral disinhibition, early loss of empathy, early perseverative stereotyped behavior, hyperorality and executive deficits with relative sparing of memory and visuospatial functions. His Frontal Assessment Battery (FAB) (Dubois et al., 2000) was 14/18 and his Mini-Mental State Examination (MMSE) 30/30. Differential diagnosis consisted of an alcohol-induced persisting dementia (DSM-IV 291.2) and possible FTD. They advised to transfer him to a rehabilitation ward of an alcohol clinic.

Subsequently, fluorodeoxyglucose positron emission tomography (FDG-PET) showed frontotemporal and cerebellar hypometabolism. Tau protein level in cerebrospinal fluid was 442 ng/l (N < 350 ng/l). The abnormal FDG-PET scan in the context of the patient’s clinical picture and significant functional decline, eventually supported a diagnosis of probable FTD (Rascovsky et al., 2011). Brain-MRI was not available.

In October 2009 he was admitted to the general observational unit of a nursing home, because the caregivers were not able to provide home care. In the first six weeks of admission he escaped almost daily by various inventive manners, despite the locked doors. He walked back home and was aggressive to his wife and family. Given these behavioral problems the psychologist advised a structured day program consisting of daily visits to the day-care center were activities were offered, participation in walking activities a couple times a week and all of this combined with moments of rest in his own room. Furthermore, supportive medication was started with 50 mg of trazodone. After three months he cognitively declined, he showed an increasing loss of interest, his ability to speech limited (he answered all questions with “okay”) and he got more and more disoriented especially in recognizing people. His attempts to escape disappeared. Furthermore, an increase of disinhibition was noticed, which was expressed by eating behavior, inappropriate helpfulness to other clients, and constantly opening water valves. Trazodone dose was raised to 150 mg, and further psychosocial interventions were applied like provision of tactile stimulation and stimulus reduction by bringing him more often to his own room. Unfortunately, these measures did not result in a positive effect. His behavioral problems steadily increased, which also led to extended social deprivation. He walked with his hands on the walls until they bleed, he smeared with feces, and he started to make repetitious noises and vocalizations. At this time he was transferred from the observational unit to a Young Onset Dementia Special Care unit. We intensified the stimulus reduction, which resulted in a small improvement of his VDB. However, the VDB remained difficult to
handle. It only decreased by bringing him to his own room, which resulted in further social deprivation.

One of members of the nursing staff had the idea of trying a lollipop to reduce the VDB. She was inspired by the idea of calming a child by using a pacifier. Surprisingly, this intervention was effective. The VDB obviously decreased and there was even a slight improvement in social engagement. The reduction of VDB was recorded by clinical observations. At the moments he used the lollipop he relaxed, mostly sat down in a chair and sometimes closed his eyes. Physically/motor agitation decreased, his inner need to walk diminished and he stopped making repetitious noises and vocalizations. It took him about one hour to finish the lollipop and he used eight lollipops a day on average. After the lollipop was finished the physically/motor agitation and VDB returned almost immediately. In this way the lollipop was daily effective during eight months, until six weeks before he died. These last weeks of his life his physical condition seriously decreased.

Discussion

In this patient with probable FTD, the use of a lollipop was associated with a reduction of VDB. Using a lollipop involves multimodal processes, such as oral motor functions, tasting of sweetness, olfaction, and intake of sucrose. We pose under various theory-based hypotheses, which could explain the successful effect of the lollipop.

Okamoto et al. (2009) found that during tongue movements and the act of tasting the (ventro) lateral prefrontal cortex is significantly activated. This area of the brain may play an important role in response inhibition (Walther et al., 2010). Subsequently, this theory suggests that tongue movements and tasting may be involved in the capacity to suppress inappropriate actions, such as VDB. The effect of the lollipop can also be contributed to the result of tasting sweetness and absorption of sucrose. First of all, altered food preference toward sweet foods is a prominent and early feature in FTD (Miller et al., 1995). Ikeda et al. (2002) hypothesise that changes in eating behaviors, including preference toward sweet foods, reflect the involvement of a common network of the frontal lobe, temporal lobe, and the amygdala. Finally, using a lollipop and being vocally active at the same time requires dual-tasking. Dual tasking refers to the ability to allocate attention between two tasks performed simultaneously. Impaired dual-tasking is increasingly recognized as a marker of executive dysfunction and increased distractability, which is frequently seen in FTD (Allali et al., 2007). This hypothesis might be in our view the most obvious explanation of the effect of the lollipop on VDB. Yet, we must note that the diagnosis of FTD in this case is only mediocrely supported by the performed diagnostic tools.

With this case report we want to emphasize the benefits of creative thinking in overcoming the great challenges in dementia care. In this patient, the use of a lollipop was associated with a marked decrease in VDB. We have posed various theories, which could explain the effect of the lollipop. In this way we want to build a knowledge base in order to understand VDB and its treatments. However, we also want to point at several potential disadvantages of the lollipop that should be considered, such as dental caries, the risk of choking and diabetes hyperglycemia. The overall efficiency and safety of using a lollipop need to be further established.

Conflict of interest

None.

Description of authors’ roles

S. Jansen tried out the intervention in this case and contributed in the description of the case report. W. F. Fick collected the literature and wrote the paper. J.P. van der Borgh wrote the description of the case and assisted with further writing of the paper. R. Koopmans supervised the data collection and writing of the paper.

References


