

## Self-Neglect and Frontal Lobe Dysfunction

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An elderly lady, of superior verbal intelligence and with no severe psychiatric condition, severely neglected herself, and required prolonged day patient care. Brain scans showed selective frontal atrophy, and both traditional and new computerised neuropsychological testing demonstrated severe frontal dysfunction.

### Objectives

This is a report of a clinical case presentation from the Special Problems Conference held at the Institute of Psychiatry on 29 February, 1988. The conference, chaired by Professor Russell, was asked to examine any relationship between the patient's severe self-neglect and her frontal lobe dysfunction. Were the two entirely coincidental? Were either or both related to her drug and alcohol abuse? Was an underlying physical illness responsible? Was the self-neglect the result of stressful life experiences interacting with pain and some physical disability in someone with a long-standing personality disorder, or could specific frontal pathology adequately explain the deterioration in her level of functioning?

### Presentation of case

The full history as presented below was obtained from the patient, her son, her social worker, and past medical records.

Mrs G, aged 80, was admitted as a day patient in August 1986 following a referral from her general practitioner and a subsequent consultant domiciliary visit, after she had come to the attention of the social services. In the previous three months she had had a number of falls, her hearing had become worse, and she started losing interest in life. She became aggressive towards her family and her home-help, and neglected her personal hygiene. She ate poorly, often instead giving money to her son and grandson, or spending it on Codis tablets (aspirin and codeine phosphate) and lager. She had been losing weight, was malnourished and incontinent, but refused to use the toilet. Her flat was squalid, with cigarette ends, rotting, uneaten meals, and excrement from her pekinese lying around. She seemed largely unaware of her state of self-neglect.

### Family history

Her father, a bookmaker, died aged 85, after a stroke. He had abused alcohol and been in prison twice. Her mother died at the age of 67 from breast cancer; she was described as artistic, delicate, and highly strung. The patient was the youngest of seven siblings, three of whom were still alive, although she had no contact with them. Two sisters were reported to have had agoraphobia.

### Personal history

Mrs G was born in 1908 and brought up in south London, but her childhood was marred as her mother was cold and aloof, and her father "used to shout a lot". At school she was academically average, but popular, and enjoyed sport and music; she left at the age of 14. She had had a number of jobs, but until her marriage in 1932, aged 24, she mainly helped her mother with the housekeeping. During World War II she worked as a postwoman, and then as an assistant to her husband, a dental technician. From 1950 she was a pianist in a public house. There were sexual difficulties in the marriage, and her husband tended to live his own life. He died in 1969 at the age of 61 of a myocardial infarction. Their only child was born by Caesarean section in 1939. The son said that his own marriage broke up as a result of interference by the patient, and he found it difficult to cope with her. She described her past personality as sociable, artistic, and idealistic. Her son described her as difficult, argumentative, and moody, and said she had antagonised friends and relatives.

### Medical and psychiatric history

Aged about 70, Mrs G suffered a series of falls which resulted in arm and leg fractures, as well as a fractured right hip, for which she received a hip replacement. Since then she had had some difficulty walking and used a frame; she also suffered from arthritis.

At the age of 38 she received out-patient treatment for agoraphobia and marital problems, and began taking Drinamyl (dexamphetamine and amylobarbitone). She was seen on a number of occasions over the next two years, and attended a day hospital for a short time. In 1969, shortly after her husband's death, she requested Drinamyl, which she said she could no longer obtain from her general practitioner, from an emergency clinic.

She was an in-patient at the Maudsley in 1978 and again in 1979 because of severe alcohol abuse and self-neglect, in addition to personality disorder. She now smoked 20 cigarettes a day and drank three or four cans of lager, as well as taking Codis tablets when she could afford them. She lived in a large detached house with her son, grandson, and 18-year-old pekinese. The house was in danger of being repossessed because her son had persuaded her to make him part-owner and then taken out a mortgage upon which he had defaulted. She had no friends outside hospital. She frequently had arguments with the home-helps about what had been bought for her, which resulted in a number of

them leaving. She repeatedly refused to pay for the meals-on-wheels service, which resulted in it being withdrawn, although she denied not having paid for them. The house remained in poor condition, with rotting woodwork, bare floor-boards, and damp carpets.

#### Mental state examination

Mrs G's mental state had changed little over the past 18 months. She was thin, and her clothes were sometimes dishevelled. She enjoyed conversation and maintained adequate rapport. Her current worries were over money, and the possible repossession of her house. She also complained of back pain and of her home-help not buying her pain killers. However, she was still able to be cheerful and she was not clinically depressed. Sometimes she was disinhibited, but she was not thought disordered, and suffered no abnormal beliefs or experiences. Her thought content was normal, and she had no obsessions or compulsions. Her general cognitive function was normal. She understood why she attended the day hospital, but did not fully appreciate her role in the continuing crises, her general self-neglect, or her social deterioration.

#### Physical examination

On admission she was cachectic, with rheumatoid deformities in both hands and mild heart failure. At the time of the case conference she was not in heart failure, but remained cachectic. No neurological abnormalities were elicited. Her weight had decreased from 44 to 41 kg.

#### Investigations

Comprehensive blood tests and ECG were normal. Occasional urinary tract infections responded to treatment with antibiotics. EEG showed non-specific mild diffuse dysfunction. X-rays revealed degenerative changes in the lumbar spine, and sequential chest X-rays showed a soft-tissue opacity in the left mid-zone centrally, which had slightly increased in size over the previous 18 months. The Chest Unit at King's College Hospital advised that while she was asymptomatic, further investigation was inappropriate, as it was likely to be a slow-growing squamous carcinoma, and any treatment might do more harm than good. A computerised tomography brain scan showed mild cerebellar atrophy, and marked but localised atrophy of the frontal lobes. Appearances were unchanged over 18 months.

#### Neuropsychological assessment

Two months following admission (October 1986), Mrs G was given a detailed neuropsychological assessment, including the short form of the Wechsler Adult Intelligence Scale (WAIS), the Kendrick Cognitive Tests for the Elderly, the Wisconsin Card Sorting Test (WCST), and the Word Fluency Test. Her pro-rated verbal IQ of 128 placed her in the superior range, and her pro-rated performance IQ of 94 was in the average range, the 34-point discrepancy

being significantly abnormal. Her scores on both the Kendrick Object Learning Test (KOLT) and the Kendrick Digit Copying Test (KDCT) were within the non-dementing range, with age-scaled quotients of 95 and 93, respectively. She showed impairments on both traditional tests of frontal lobe function, the WCST and the Word Fluency Test, with performance on the former being similar to that of patients with frontal damage, and performance on the latter being closest to that of elderly depressed patients. On the WCST, she was able to obtain only one category, and she had a high ratio of perseverative errors to total errors on both the Nelson and Milner methods of scoring, performance typical of patients with frontal damage (Lezak, 1983). On the Word Fluency Test, she made one repetition within each category. In February 1988, she was given Thurstone's Word Fluency Test, and her performance was impaired, similar to that of patients with left frontal damage. She also made six repetitions.

In addition to the traditional neuropsychological tests, in February 1988, Dr Sahakian also gave Mrs G three tests of Planning and Spatial Working Memory (CANTAB) which utilise a microcomputer and a visual display unit (VDU) with a touch-sensitive screen (Morris *et al*, 1987, 1988). (a) The computerised Corsi Block Span Test, based on the block-tapping test of Corsi (Milner, 1971), is a test of spatial memory span. It was chosen as a simple index of the patient's ability to retain and execute a short sequence of spatial moves, an ability which is impaired in patients with right hippocampal lesions (Milner, 1971). (b) The Working Memory Test measures spatial working memory, and is related to the Olton Radial Arm Maze Test (Olton, 1982). A similar test is sensitive to lesions in the sulcus principalis area of pre-frontal cortex in non-human primates (Passingham, 1985). (c) The Computerised Tower of London Test, an adaptation of the human neuropsychological test developed by Shallice (1982), assesses planning deficits in patients with frontal lobe disorders. In the computerised version of this test, the patient is shown a display of coloured balls at the top of the VDU and is asked to think, plan, and then move the coloured balls in the display at the bottom of the screen until the display is identical to that at the top, within a specified number of moves.

While Mrs G's visuospatial span was not impaired, her ability to utilise and execute the low-level strategies required for efficient searching was impaired, as was her higher-level planning. Indeed, of the ten problems on the Tower of London Test, she was able to complete only three within the required number of moves. Furthermore, in the course of problem solving, she showed a substantial number of rule breaking and perseverative errors, behaviour indicative of frontal lobe dysfunction.

#### Interview

PROF. RUSSELL: Hello, have we met before?

MRS G: Yes we have, some time ago.

PROF. RUSSELL: You've got a hearing aid haven't you?

MRS G: Yes, we had some problems with it last time I spoke to you.

PROF. RUSSELL: I fixed it, didn't I?

MRS G: No, you didn't, I found out later there was a piece of paper stuck in it.

PROF. RUSSELL: I want to know how you're getting on.

MRS G: Bloody terrible: they're taking my house after 30 years – my stupid son, the house is going because he hasn't paid the debt.

PROF. RUSSELL: Has this anything to do with you being unable to look after the house?

MRS G: No, I keep myself clean, and these home-helps come in; no, that's got nothing to do with it doctor.

PROF. RUSSELL: I heard that you weren't well enough to look after it properly.

MRS G: I haven't any money, I've been feeling hungry. I haven't always got food to eat doctor.

PROF. RUSSELL: Yes, but you do drink?

MRS G: I've got a beautiful pekinese dog, he's 18 years old.

PROF. RUSSELL: I was asking you about drinking alcohol.

MRS G: Oh it's only lager – I used to drink whisky.

PROF. RUSSELL: Do you know what day it is today? [29 February].

MRS G: Yes, it's leap year – have you been leapt on?

PROF. RUSSELL: You sound very cheerful today.

MRS G: I might look cheerful but I feel terrible; my son wants his backside kicked.

Professor Russell examined Mrs G for cerebellar signs, but none were elicited, and since she had come to the conference in a wheelchair, she was asked to show how she was able to walk with a little assistance. He also asked her whether she minded if one of the other doctors asked her a question. She replied that she did not. Dr Post then attempted to elicit any lability of mood, since she seemed euphoric.

DR POST (*emeritus consultant psychiatrist*): You say that you appear cheerful but deep down you are miserable. What was the worst moment in your life?

MRS G: Having my hip broken after I tripped over a hole in the pavement at the Borough.

DR POST: Are you sure that was the worst moment?

MRS G: Yes, how would you feel if you had broken your hip? Only the day before I was climbing an apple tree and now I can hardly walk!

During the course of the interview Mrs G appeared to enjoy being the centre of attention. As illustrated above, she was disinhibited at times, although her mood was not labile. Her memory and orientation were not abnormal, and she talked about the kind treatment she had received at this hospital.

### Conference discussion

PROF. LISHMAN (*professor of neuropsychiatry*): There are two possibilities regarding diagnosis: either there is no psychiatric diagnosis but what we are seeing is an elderly woman with learned helplessness, because her son has wrecked her final years of peace so that she has suffered a series of very traumatic life events; but the other, much more likely diagnosis is one of organic brain pathology, and unusual frontal atrophy which has resulted in a circumscribed neuropsychological deficit. This may, for example, be a case of very late onset Pick's disease, or related to her excessive alcohol consumption. On the

other hand, it may in some way be related to the presumptive lung carcinoma. There does not seem to be a history of transient confusional episodes which may have supported the latter possibility.

DR CYBULSKA (*consultant psychiatrist with an interest in Diogenes syndrome*): Clinically this patient has much in common with senile breakdown syndrome, as described by MacMillan, or the Diogenes syndrome, described by Clarke. These were the only two major studies of self-neglect in old age in the UK, and even in severe self-neglect around half of those studied had no psychiatric disorder and were generally of higher than average intelligence. It has been suggested that the syndrome may be a reaction late in life to stress, particularly to bereavement, in a certain type of personality.

Dr Cybulska asked Dr Sahakian whether she thought that the perseverative behaviour shown on the computerised test could be regarded as another form of the stereotyped behaviour seen in patients with these types of syndromes, such as stereotyped collecting or hoarding of objects. Dr Sahakian thought that it could.

DR POST: The Diogenes term is inappropriate in this case since the patient is not reclusive, and obviously enjoys company. It is difficult to know what the original psychiatric disorder was, since she has a long history of psychiatric disorders. The frontal changes may be longstanding and secondary to toxic damage by drugs or alcohol. With regard to Pick's disease this would be a very unusual course, and so I think that diagnosis is unlikely.

DR JANOTA (*senior lecturer in neuropathology*): I can only speculate on the pathological abnormality causing the frontal atrophy. Is it possible that she did not react appropriately to the stink in her house because of anosmia, which may be a sign of a basal meningioma? It would be very unusual for the brain atrophy to have been caused by alcohol. A remote effect of a carcinoma is unlikely, but it is just possible that some form of carcinomatous encephalitis affecting the anterior temporal or the posterior frontal region may be responsible. There is a link with cerebellar atrophy, which is sometimes associated with a carcinoma.

PROF. LEVY (*professor of geriatric psychiatry*): A group of clinicians and neuropathologists in Lund, Sweden, have suggested that in primary dementia there may be a subgroup of up to 15% with localised frontal pathology of neither Pick's disease nor Alzheimer's disease. The changes appear to be non-specific, and this patient appears to fit in with their view. [Gustafson, 1987; Englund & Brun, 1987]

DR BERGMANN (*consultant in charge of the case*): It is difficult to be specific about the nature of the chest lesion, although it may have given rise to non-metastatic central nervous system complications of carcinoma.

DR POST: Even so, there is no way we have of demonstrating carcinomatosis in this lady.

PROF. LISHMAN: I am not aware that severe self-neglect with a selective frontal problem has been described before.

In the concluding remarks, Dr Bergmann suggested that in many cases of senile self-neglect, organic dementia or a functional psychosis is not evident. Where they are evident, although a necessary feature, they do not seem sufficient to explain the manifestations of extreme

self-neglect. Where personality disorder is the only manifestation that can be detected, it is even less of a sufficient explanation for the syndrome.

It is suggested that for some cases at least, frontal lobe deficits may be the missing factor in accounting for this mysterious condition. Regarding further investigations, Dr Janota suggested that a magnetic resonance scan would have been useful, to try to delineate more clearly the frontal pathology.

### Discussion

The first major study on gross self-neglect in the elderly (Macmillan & Shaw, 1966) found that a large proportion of the patients were not suffering from psychosis, but were described as having certain personality characteristics in common. In particular, a hostile attitude and resistance to help were noted, and the individuals were often described as stubborn, obstinate, aloof, suspicious, and aggressive. A similar pattern was also described by Clarke *et al* (1975), who noted that the patients seemed to show lack of shame about their state of physical hygiene, and sometimes hoarded rubbish. In addition, roughly half of these patients showed no evidence of psychiatric disorder and had higher than average intelligence, many having led successful lives. It was suggested that this pattern could be a reaction late in life to stress in a certain type of personality, and it was labelled 'Diogenes syndrome', after the ascetic Greek philosopher who lived as a vagabond beggar, and supposedly slept in a barrel. However, the term 'Diogenes' and even the validity of describing it as a separate syndrome have been questioned by Post (1982), who argued that it is merely the end-stage of a personality disorder, the patient being best described as a 'senile recluse'. Cybulska & Rucinski (1986) point out that it is probably aetiologically heterogeneous. However, perhaps the most important point is that a large proportion of the cases appear to be suffering either from no psychiatric disorder, or from a disorder which is not sufficiently severe to explain their extreme social deterioration.

Although the case conference discussed this woman's self-neglect in relation to a personality disorder, and the frontal atrophy in relation to the neuropsychological deficits, as well as the possible underlying pathology of this, it did not clearly address the question of a relationship between the frontal dysfunction and her self-neglect. However, there are certain aspects of the frontal lobe syndrome (Lishman, 1987) which typify this particular patient, and are also surprisingly similar to many of the personality characteristics described in gross self-neglect. When interviewed, the patient was boisterous and overfamiliar, showing a disinhibition and lack

of tact. Her mood was irritable and somewhat incongruous when asked about distressing events. From her history it seemed clear that her judgement was poor, and she was unable to plan effectively or predict the consequences of her actions. In addition, she suffered from lack of initiative, and seemed unable to complete simple tasks associated with her self-care. Frontal damage can also result in hostility and aggression, and paranoid ideas.

Amphetamine addiction may produce perseverative and stereotyped actions and thoughts, as well as paranoid ideation (Connell, 1958; Rylander, 1971), and the similarity to frontal lobe dysfunction has been noted (Ridley & Baker, 1982; Robbins *et al*, 1989). Chronic alcohol abuse can impair performance on problem-solving tasks, including the Wisconsin Card Sort Test (Butters, 1985). However, it is unlikely that her history of substance abuse would account for such marked frontal dysfunction, especially as there were no major physical sequelae suggestive of severe alcoholism.

'Dementia of frontal lobe type' has been described by Neary *et al* (1988). It is characterised by social misconduct, personality change, and disinhibition in general, but attention remains intact, and memory impairment is variable. Several patients exhibited marked self-neglect.

Neuropsychological testing revealed frontal deficits, as did single-photon emission tomography studies. In Neary *et al*'s series of 138 dementia cases, almost 25% were classified as dementia of frontal lobe type. Although there were many similarities between our patient and their patients, verbal IQ was spared, and Mrs G was not diagnosed as having dementia. It will however be of great interest to determine whether in follow-up her cognitive function declines.

Although only Macmillan & Shaw (1966) made an extensive inquiry into the patient's previous personality by interviewing relatives, neighbours, and friends, as well as obtaining written information from other sources, it is not clear whether this was, in the majority of cases, a good description, since the individual may have been in a gradual state of deterioration for several years. Lishman (1987) points out that the previous personality may be important in determining the particular presentation of patients suffering from frontal lobe damage. Two other patients who have been previously admitted to the Felix Post Unit suffering from severe self-neglect also showed signs of frontal dysfunction on neuropsychological testing, and one of these, in addition, had evidence on computerised tomography of specific frontal damage. It is suggested that in some cases of severe self-neglect in elderly patients without

psychiatric disorder of a sufficient severity to explain the gross deterioration, underlying frontal lobe dysfunction may play an important part in their decline.

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