Chapter 3

Atypical Alzheimer's Disease, Other Dementias, and Differential Diagnoses

3.1 When Imaging and Further Observation Are Needed

Case 081 Could It Be Stroke?

Mr Chan, a 69-year-old gentleman, presented with concerns raised by his daughter about his memory problem. He was said to be forgetful of recent events.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 22/30 on MMSE, indicating cognitive impairment after adjusting for education level. Mr Chan's performance was significantly impaired in delayed recall (0/3) and poor in calculation (2/5), and he had slight problems in orientation to time (4/5) and place (4/5). His performance was, however, normal in registration (3/3), language (5/5), three-step commands (3/3), and visuospatial relationship (1/1). When tested using MoCA, he scored 19/30, indicating mild cognitive impairment after adjusting for education level.
ADL/IADL	Mr Chan was independent in all activities of daily living (100/100 on the Barthel Index) and instrumental activities of daily living (56/56 on the Lawton IADL Scale), except for occasional verbal cues needed when there is a change in his medication dosage.
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 3 progressing to stage 4, indicating questionable to mild dementia. Concentration deficit was evident during assessment and when asked to read a passage; he was able to retain relatively little information.

History Taken with Carer by Primary Care Physician

Mr Chan's daughter reported noticing memory problems in her father that had concerned her for a year, although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
○ Managing money and finances
× Managing medication independently
○ Using transport

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There were no additional clinical features to consider for non-Alzheimer's dementia. Other medical history includes hypertension, hypercholesterolaemia, diabetes mellitus, and a previous stroke. No family history of psychiatric disorders or dementia was reported. Mr Chan had little education: according to his daughter, he probably had more than two years but less than six years of education.

Investigations

CT brain (plain) scan was ordered.

Diagnosis

Mild cognitive impairment.

Management

No medication was prescribed due to the pending investigation findings. Non-pharmacological intervention was indicated: Mr Chan was recommended to a centre-based programme with cognitive stimulation to maintain cognitive and self-care functioning and was encouraged to do regular exercise, have a healthy diet and mental stimulation, manage stress, and maintain an active social life to promote general health and quality of life.

Suggestions for the Primary Care Team

The primary care team may sometimes find it challenging to differentiate between mild vascular cognitive impairment and mild dementia of the vascular subtype. While in this case, the IADLs (basic and instrumental) suggested mild cognitive impairment only, Mr Chan's cognitive screening test scores were unusually low for mild cognitive impairment. The presence of vascular risk factors nevertheless does not equate to the diagnosis of vascular dementia. The primary care team is advised to monitor the cognitive changes over time and his response to the interventions. A CT scan could help understand the extent of the stroke, while a PET amyloid scan is suggested.

Presentation at the mild cognitive impairment stage or very early dementia is a good time for equipping the person with memory skills or adaptive strategies to enhance memory performance. Although vascular dementia is not yet evident at this moment, preventive measures to minimise vascular-related risk factors are always recommended, such as adopting a healthy diet and exercising regularly, especially in cases with high vascular risk as in Mr Chan's case. The primary care team should engage him in cognitively stimulating activities while developing a healthy lifestyle.

Case 082 A Sweet Tooth

Mrs Kwan, a 79-year-old lady, presented with concerns raised by her daughter about her memory problem. She was noted to have misplaced valuable items, getting lost, and being unable to find her way home.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 10/30 on MMSE: indication of cognitive impairment, adjusted for educational level. Mrs Kwan's performance was significantly impaired in orientation to time (0/5) and place (0/5), delayed recall (0/3), calculation (0/5), and visuospatial relationship (0/1). She performed fairly in three-

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	step commands (2/3) and normal in registration (3/3) and language (5/5). Abnormal clock face drawing with inaccurate denotation (reversal of numbers) and impaired executive function, conceptual deficits, visual-spatial deficits, and preservation errors were noted on the Clock Drawing Test (Figure 3.1).
ADL/IADL	Mrs Kwan was independent in the most basic ADL (Barthel Index 99/100), except for a need for supervision in bathing due to cognitive impairment. Instrumental activities of daily living (Lawton IADL Scale 10/56) were dependent.
Depressive symptoms	No indication of depression (GDS-15 score 1/15).
Staging and clinical rating	Results suggested a Global Deterioration Scale stage 6, indicating moderately severe dementia. She was largely unaware of all recent events and experiences in her daily life. No behavioural or psychological symptoms of dementia were noted.

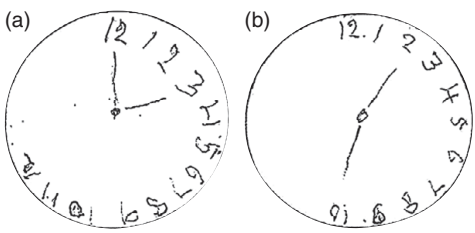

Figure 3.1 Findings from Mrs Kwan's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Mrs Kwan's daughter reported noticing memory problems in her mother that had concerned her for about two years, although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
× Managing money and finances
× Managing medication independently
× Using transport

Clinical features of overeating, especially sweet food (including chocolate and candy), suggestive of possible non-Alzheimer's dementia (bvFTD), were noted. Comorbidities of hypertension, diabetes mellitus, and hypercholesterolemia were reported. No family history of psychiatric disorders or dementia was reported. She had received secondary education.

Investigations

CBP, R/LFT, VDRL, vitamin B_{12}, folate, fasting sugar, fasting lipids, and TFT were ordered. Except for the negative VDRL value and elevated fasting sugar level, all other investigations were normal. A brain CT scan revealed vascular dementia.

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Diagnosis

Vascular dementia. Differential diagnoses: frontotemporal dementia and a frontal variant of Alzheimer's disease.

Management

Donepezil 5 mg daily was prescribed. Mrs Kwan was recommended to join a centre-based programme with cognitively stimulating activities to maintain cognitive and self-care functioning and was encouraged to do regular exercise, have a healthy diet and mental stimulation, and maintain an active social life for general health and quality of life.

Suggestions for the Primary Care Team

Mrs Kwan showed unusually low MMSE and Lawton IADL scores, with a liking for sweet food. In view of the multiple domains of cognitive deficits, Mrs Kwan may have vascular dementia, frontotemporal dementia, or the frontal variant of Alzheimer's disease. Physicians can observe cognitive and personality changes as well as mood swings over time and response to medication; in cases of declining cognition, memantine can be added on top of donepezil.

In terms of her residual cognitive functions, attention and language appeared to be her areas of strength, and therefore communication and social activities should be maintained and encouraged for as long as possible. In cases of frontotemporal dementia, it is foreseeable that language comprehension and expression will deteriorate further, with mood and behavioural symptoms affecting ADLs, although in this case Mrs Kwan's ADLs were still independent at the present time. The primary care team should work with Mrs Kwan and her family to encourage her to maintain her existing lifestyle and routine as much as possible, while at the same time enriching her social activities. For her overeating problem, the family will need to be educated that strict restrictions or prohibitions may trigger mood problems, especially in the case of frontotemporal dementia. They should be provided with appropriate care tips for the situation, such as preparing for Mrs Kwan healthy finger food/snacks with low calories decreasing meal size but increasing the frequency of meals.

Case 083 Long History of Post-Stroke Cognitive Impairment

Mr Tang, a 91-year-old gentleman, presented with concerns raised by his wife about his cognitive problems, which started about six years ago after a cerebrovascular accident. His wife complained of his declining memory for recent events and misplaced items, which seemed to be worsening in the past two to three years.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 24/30 on MMSE, suggesting no cognitive impairment, after adjusting for education level. On MoCA, Mr Tang scored 21/30, indicating mild cognitive impairment. He showed impairments in executive function, verbal fluency, and delayed recall (free recall 0/5, categorical 2/5, and multiple choice 3/5). The Clock Drawing Test result was normal.
ADL/IADL	Mr Tang needed moderate help in toileting, bathing, stair climbing, and dressing and minimal help in bed/chair transfers, ambulation, and bowel

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	and bladder control. He was independent in other basic ADLs (Barthel Index 73/100). For IADL, he was dependent in meal preparation, laundry, and housekeeping; needed assistance in community access, handling finances, and grocery shopping; and needed supervision in taking medications (medications were prepared by a domestic helper; he would forget if not reminded), and external communication (able to pick up phone calls, but rarely calls) (Lawton IADL Scale 22/56).
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 4, indicating mild dementia. He showed decreased knowledge of current and recent events and a concentration deficit on serial subtractions, and the carer reported a decreased ability to travel and handle finances.

History Taken with Carer by Primary Care Physician

Mr Tang's wife reported noticing memory problems in her husband that had concerned her for about five to six years. No delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
○ Managing money and finances
× Managing medication independently
× Using transport

There was no additional clinical feature to consider for non-Alzheimer's dementia. Comorbidities of hypertension, diabetes mellitus, hypercholesterolemia, and a cerebrovascular accident (six years ago) were reported. No family history of psychiatric disorders or dementia was reported. He has received tertiary education.

Investigations

Calcium, VDRL, vitamin B_{12}, and TSH were ordered. All investigations were normal, except for vitamin B_{12} deficiency.

Diagnosis

Vascular dementia with possible age-related cognitive impairment.

Management

Donepezil 5 mg daily and vitamin B_{12} were prescribed. He was also recommended to join a centre-based programme with cognitively stimulating activities for at least 18 months to maintain cognitive function.

Suggestions for the Primary Care Team

With rather intact visuospatial function as shown on the Clock Drawing Test and cognitive impairment after a stroke at an older age, the history is indicative of vascular (post-stroke) dementia with possible age-related cognitive impairment likely due to vitamin B_{12} deficiency. However, it should be noted that cardiovascular risk factors

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may also lead to Alzheimer's disease (1). Memantine may be considered an add-on therapy or when donepezil cannot be tolerated.

At the relatively old age of 91, Mr Tang's cognitive performance was satisfactory and appeared well maintained. His ADL and IADL performance, however, appeared inconsistent and worse than expected relative to his cognitive functional level: it is common for people with vascular dementia to have their physical functions affected at the same time as their cognitive performance. Maintenance of physical functions, including balance, mobility, and muscle strength, are equally important as cognitively stimulating activities at this moment to prevent future complications, such as falls and muscle wasting.

Case 084 Difficulties in Word Finding

Mr Fung, a 75-year-old gentleman, presented with concerns raised by his wife about his declining cognitive functions. His wife noticed difficulties in word finding, remembering recent events, misplacing items, being slow in his reactions, and problems finding his way after a minor stroke.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 21/30 on MMSE, indicating cognitive impairment after adjusting for educational level. Mr Fung showed impairment in calculation (1/5), three-step commands (1/3), visuospatial relationship (0/1), a slight problem in orientation to time (4/5), and delayed recall (2/3). He was, however, normal in orientation to place (5/5), registration (3/3), and language (5/5). The Clock Drawing Test (Figure 3.2) indicated dementia; he showed executive function deficits in planning and organisation, and conceptual deficits.
ADL/IADL	He was independent in basic ADLs (Barthel Index 100/100). For IADL, he was dependent in taking medications, modified dependent in external communication and handling finances, and needed supervision in meal preparation, doing laundry, housekeeping, and community access (Lawton IADL Scale: 40/56).
Depressive symptoms	Scored 1/15 on GDS-15, suggesting no indication of depression.
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 4, indicating mild dementia. He showed decreased knowledge of current and recent events, had got lost when travelling to unfamiliar locations, and had a concentration deficit evident on serial subtractions. His basic activities of daily living were, however, maintained, and he was able to select proper clothing to wear.

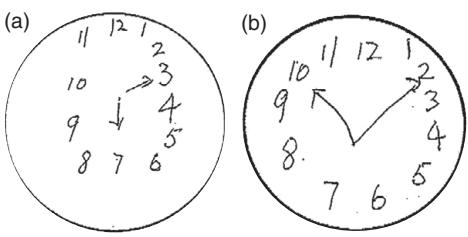

Figure 3.2 Findings from Mr Fung's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

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History Taken with Carer by Primary Care Physician

Mr Fung's wife reported noticing memory problems in her husband that had concerned her for about one and a half years after a minor stroke. However, the decline had become more significant in the last two months. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
× Managing money and finances
× Managing medication independently
○ Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Comorbidities of hypertension, diabetes mellitus, hypercholesterolemia, and a previous cerebrovascular accident were reported. No family history of psychiatric disorders or dementia was noted. He had received five years of primary education.

Investigations

CBP, R/LFT, calcium, fasting sugar, and fasting lipids were ordered. All investigations were normal except for the elevated fasting sugar. A CT brain scan two years ago revealed multiple bilateral cerebral hypodensities, which can be ischaemic changes or infarction.

Diagnosis

Dementia, likely vascular dementia (mixed dementia could not be ruled out), with no distressed behaviours and neuropsychiatric symptoms of dementia.

Management

At the time of the report, no medication was prescribed, as a blood work-up was awaited. He was encouraged to do regular exercise, have a healthy diet and mental stimulation, manage stress, maintain an active social life, and continue joining social activities classes (e.g., English class and Chinese class) at locations close to his residence. Mr Fung was also recommended to join a centre-based programme for cognitively stimulating activities to maintain his cognitive function and quality of life.

Suggestions for the Primary Care Team

The memory and language problems were mainly related to stroke, with a lot of vascular elements in the history. The CT brain scan can be repeated to characterise the speech impairment, which might be caused by conduction dysphasia in superior angular gyrus syndrome. A cholinesterase inhibitor in combination with memantine may be considered.

There are features suggestive of Alzheimer's disease; therefore, mixed dementia is the differential diagnosis: Mr Fung presented with a cognitive impairment pattern that is compatible with early Alzheimer's disease, with higher cognitive functions being impacted first (as shown in his Clock Drawing Test, with worse performance on the drawing part and improving on the copying part), as well as memory and orientation, while ADL performance was more preserved compared with IADL ability. Mr Fung had a relatively active social life, which is a strength. The primary care team, however, needs to remind his family about the need for

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adaptive strategies to help Mr Fung maintain his social life for as long as possible, for example by using a GPS tracking device or smartphone for safety measures when he goes out, cue cards or reminders in his wallet, and regular telephone contact by carers for caring and safety.

Case 085 Intact Visuospatial Performance

Mr Lo, a 79-year-old gentleman, presented with concerns raised by his wife about his memory decline. He was noted to have problems with finding his way in familiar places, forgetting recently learned materials such as things read and people met, and in verbal expression and word finding.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 23/30 on MMSE, suggesting no indication of cognitive impairment after adjusting for educational level. Results on MoCA (19/30) indicated mild cognitive impairment after adjusting for education. Mr Lo's performance was impaired in attention (3/6), abstraction (0/2), and orientation (3/6). Performance was fair in naming (2/3), language (2/3), and delayed recall (3/5). The Clock Drawing Test result was normal.
ADL/IADL	Mr Lo was largely independent in the basic ADLs (Barthel Index 93/100), except for minimal help required in ambulation, stair climbing, and dressing. For IADL, he needed assistance in meal preparation, external communication, doing laundry, housekeeping, and grocery shopping, and he needed supervision/a reminder in taking medications, community access (able to go out to nearby areas only), and handling finances (Lawton IADL Scale: 30/56).
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 4, indicating mild dementia. He showed decreased knowledge of current and recent events; a concentration deficit on serial subtractions; and a decreased ability to travel and handle finances; he was able to recall an address given to him for memorising, although he may not be able to select appropriate clothing for the weather.

History Taken with Carer by Primary Care Physician

Mr Lo's wife reported noticing memory problems in her husband that had concerned her for about two to three years, although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

- ○ Remembering recent events
- × Recalling recent conversations
- × Word finding
- × Managing money and finances
- × Managing medication independently
- × Using transport

No additional clinical feature of non-Alzheimer's dementia was noted. Comorbidities of hypertension, hypercholesterolemia, and old haematologic stroke were reported. No family history of psychiatric disorders or dementia was reported. He has received a secondary education.

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Investigations

CBP, ESR, R/LFT, calcium, vitamin B_{12}, folate, fasting sugar, fasting lipid, MSU X R/M and culture test, HbA1C, PSA, and urine albumin/creatinine ratio were ordered. MRI revealed old haemorrhagic insult/cystic change, small vessel ischaemia, lacunar infarct, and mild to moderate cerebral atrophy.

Diagnosis

Mixed vascular and Alzheimer's disease.

Management

Rivastigmine transdermal system 5 mg was prescribed. Mr Lo was also recommended to join a centre-based programme with cognitively stimulating activities for the maintenance of cognitive function and quality of life.

Suggestions for the Primary Care Team

This is a typical case of vascular dementia with or without Alzheimer's disease with intact visuospatial function. The response to the cholinesterase inhibitor should be watched. On top of the cholinesterase inhibitor, memantine may also be considered. A CT brain scan can be considered to confirm the vascular burden.

Mr Lo had satisfactory performance in his cognitive functions in general, although his impairment in verbal expression early in the course of the disease – which was noted in both cognitive assessment and reports on daily living – was atypical of Alzheimer's disease and may reflect the location where the small vessel ischaemia has happened. Mr Lo's difficulties in ADL/IADL tasks were mainly caused by his short-term memory deterioration. At this stage, therefore, the primary care team could focus on working with Mr Lo and his family to identify the best ways to minimise the impact of short-term memory decline and maintain his ADL/IADL functioning. For example, Mr Lo may be allowed more time to perform his ADL/IADL tasks, with a carer providing only verbal cues. A carer should accompany Mr Lo in using public facilities, transportation, shopping, etc., to encourage him to stay in touch with the community in a safe manner. The primary care team should also advise the family to take safety precautions to enable Mr Lo to go out of nearby areas, for example, by using a location-tracking device.

3.2 Pseudodementia

Case 086 Significant Depression and Questionable Dementia

Mrs Yip, an 83-year-old lady, presented with concerns raised by her daughter about her memory decline. Mrs Yip also complained about her own memory decline.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 14/30 on MMSE, indicating cognitive impairment after adjusting for educational level. Mrs Yip's performance was significantly impaired in delayed recall (0/3) and calculation (0/5); poor in orientation to time (2/5) and place (1/5); and she had a slight problem in three-step commands (2/3). Her performance was, however, normal in registration (3/3), language (5/5), and visuospatial relationship (1/1). The Clock Drawing Test showed obvious impairment in executive function (Figure 3.3).

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Activities of daily living:	Mrs Yip was independent in the most basic ADLs, except for ambulation and stair climbing (Barthel Index 95/100). For IADLs, she was dependent in taking medication; needed supervision or occasional assistance in external communication, housekeeping, and community access; and needed modified independence in meal preparation (Lawton IADL Scale: 43/56).
Depressive symptoms	Scored 11/15 on GDS-15; significant depressive mood was noted.
Staging and clinical rating	Scored 0.5/3 on Clinical Dementia Rating, indicating questionable dementia. She showed mild impairment in memory, judgement and problem-solving, and orientation; questionable impairment in home and hobbies; and was normal in personal care and community affairs aspects.

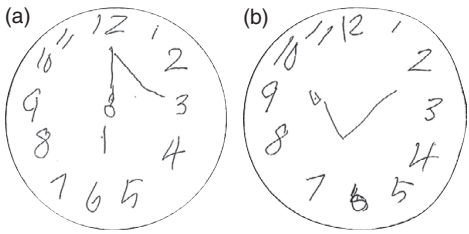

Figure 3.3 Findings from Mrs Yip's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Mrs Yip's daughter reported noticing memory problems in her mother that had concerned her for half a year, although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
○ Managing money and finances
× Managing medication independently
○ Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. She was known to a geriatric medicine outpatient clinic for hypertension. She was on a daily dosage of methyldopa 500 mg, atenolol 50 mg, hydrochlorothiazide 25 mg, and valsartan 160 mg. No family history of psychiatric disorders or dementia was reported. She had received one year of primary education.

Physical Examination Findings

General examination revealed a depressive-looking mood/affect problem, but no hygiene problem. No significant CVS or CNS findings.

Investigations

CBP, TSH, and Vitamin B_{12} were ordered. Results were normal.

Diagnosis

Dementia with depression.

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Management

Lexapro 5 mg daily was prescribed. She was also recommended to join a specialised day care service for two days per week to receive structured and tailored intervention programmes with cognitively stimulating activities to delay deterioration and maintain quality of life.

Suggestions for the Primary Care Team

Mrs Yip showed a typical pattern of Alzheimer's disease with severe depression. It is recommended to focus treatment on the depression first, arrange social support, and reassess to see if cognition improves with improvements in depressive symptoms ('pseudodementia'). Methyldopa should be stopped as it can lead to or exacerbate underlying depression. Physicians may review Mrs Yip's condition two to three months later after stopping methyldopa.

In this case, inconsistency among different assessments can be observed: Mrs Yip's ADL/IADL performance was higher than would be expected from her cognitive assessment findings on MMSE; at the same time, the Clinical Dementia Rating results suggested mild cognitive impairment only. It is likely that Mrs Yip's depressive mood has significantly masked her actual performance in the cognitive assessment, but not so much in affecting her daily life. The primary care team should explore further the reasons for the discrepancy: whether it was related to her level of motivation or denial of impairment and refusal to respond and answer properly; finding out would help develop a proper care plan. Mrs Yip should also be reassessed as her mood improves, to find out the actual level of her existing strengths and weaknesses. The primary care team should also note that 11/15 on GDS-15 suggests quite a significant level of depressive mood; the causes and factors contributing to her high level of depressive symptoms should be investigated.

Case 087 My Son Doesn't Care

Mrs Lam, a 90-year-old lady, presented with concerns raised by her social worker from the district elderly community centre about her memory problem. She was noted to have impaired short-term memory, with episodes when she has forgotten about appointments/event dates, misplaced items, and repeated questioning.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 25/30 on MMSE, suggesting no indication of cognitive impairment after adjusting for educational level. Results on MoCA (14/30) suggested mild cognitive impairment after adjusting for education. Mrs Lam's performance was impaired in visuospatial/executive performance (1/5), naming (1/3), attention (1/2), language fluency (0/1), abstraction (0/2), and delayed recall (0/5). The Clocking Drawing Test result was normal.
ADL/IADL	Mrs Lam was independent in all ADL and IADL tasks.
Depressive symptoms	Mild depression was noted (no GDS-15 rating available as Mrs Lam refused to complete it).
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 3, indicating questionable dementia. Impairment in sustained attention was evident during the assessment, accompanied by a mild to moderate anxiety symptom, although she seemed to have fair motivation in completing the assessment.

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History Taken with Carer by Primary Care Physician

Mrs Lam's social worker reported noticing memory problems in her client that had concerned her for a few years, although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

○ Remembering recent events
× Recalling recent conversations
○ Word finding
× Managing money and finances
× Managing medication independently
× Using transport

There were no additional clinical features of non-Alzheimer's dementia. Mrs Lam lived alone and had poor social support. She is known to a geriatric medicine outpatient clinic for hypertension. Comorbid trachoma was also reported. She did not receive any formal education.

Physical Examination Findings

No significant findings, except that Mrs Lam denied depressive thoughts during the general physical examination but became teary when talking about her son who was distant from her.

Investigations

No acute or subacute cerebral infarction was found on brain MRI. Cerebral atrophy (GCA score 2) was noted, with more prominent frontoparietal lobe atrophy, MTL R = 15.8 L + 13.6, Scheltens R = L = 1, and ARWMC 3. Possible subclinical hyperthyroidism, pending review at a general outpatient clinic.

Diagnosis

Mixed dementia, vascular dementia, and SVD subtype +/− limbic sparing-type Alzheimer's disease, with mild depression.

Management

Donepezil 5 mg daily was prescribed. Mrs Lam was also recommended to join a centre-based programme to receive cognitively stimulating activities to maintain her cognitive function and quality of life.

Suggestions for the Primary Care Team

This is a typical case of mood problems (anxiety and/or depression) mimicking dementia in an older person with poor social support. In view of the age of onset, with significant symptoms observed in her late 80s, negative Clock Drawing Test results, and acceptable visuospatial functioning, the mild cognitive impairment could also be age-related. A trial of donepezil 2.5 mg daily can be considered, while an antidepressant, such as escitalopram, can be considered on top of donepezil.

Given her general low score on cognitive assessments, it is out of expectation that Mrs Lam's ADL/IADL functioning was independent. There is a possibility that her poor cognitive performance was a result of her depressive mood and low motivation. In Mrs Lam's case, while a depressive mood can be observed, the GDS-15 result was not available. The primary care team should note that it is common for older people with

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depressive mood to be unwilling to share their problems/feelings with others. A social worker from the team would be in a good position to explore further and intervene as necessary, ensuring rapport building and a trusting relationship. Building on Mrs Lam's insight into her mood, the team can work with Mrs Lam to identify the best support/intervention, which could include counselling for Mrs Lam to accept the fact that her relationship with her son is beyond repair, as well as family intervention, conflict resolution, or other psychotherapies tailored to Mrs Lam's situation.

Case 088 Drinking Problem and Quetiapine

Mr Leung, an 82-year-old gentleman, presented with concerns raised by his wife about his memory change. He was noted to have repeated questioning and functional decline.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 14/30 on MMSE, indicating cognitive impairment after adjusting for educational level. Mr Leung's performance was impaired in orientation to time (1/5) and place (2/5), delayed recall (0/3), calculation, and three-step commands (1/3). His performance was, however, normal in registration (3/3), language (5/5), and visuospatial relationship (1/1).
ADL/IADL	Mr Leung was independent in the basic ADLs (Barthel Index 100/100). For IADLs, he was dependent in meal preparation; relied on carers for laundry and housekeeping; needed assistance in community access, handling finances, and shopping; and needed supervision in taking medication (Lawton IADL Scale: 24/56).
Depressive symptoms	He scored 2/15 on GDS-15, with no indication of depression.
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 5, suggesting moderate dementia. He needed assistance in choosing proper clothing to wear and was unable to recall relevant aspects of his current life such as the names of his grandchildren and his telephone number. No distressed behaviours and neuropsychiatric symptoms of dementia were noted.

History Taken with Carer by Primary Care Physician

Mr Leung's wife reported noticing memory problems in her husband that had concerned her for about one to two years, although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
× Managing money and finances
× Managing medication independently
× Using transport

There were no additional clinical features of non-Alzheimer's dementia. Comorbidities of hypertension, diabetes mellitus, hyperlipidaemia, and alcohol dependence history were reported. He was on quetiapine 25 mg at night. No family history of psychiatric disorders or dementia was reported. He did not receive any formal education.

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Investigations

CBP, R/LFT, VDRL, vitamin B_{12}, folate, and CT scan were ordered.

Diagnosis

Alzheimer's disease.

Management

Vitamin B complex daily was prescribed. A short-term cognitive rehabilitation programme was arranged to maintain cognition and self-care functioning. Mr. Leung was also encouraged to do regular exercise, have a healthy diet and mental stimulation, and engage in an active social life. He was also recommended to join a centre-based programme with cognitively stimulating activities to maintain cognitive function and quality of life.

Suggestions for the Primary Care Team

Mr Leung's presentation and history are compatible with Alzheimer's disease, with the cognitive impairment possibly related to his drinking problem and the use of quetiapine. Enquiries into the reasons for a previous quetiapine prescription are suggested to find out if there is any history of hallucinations, delusions, sleep problems such as REM sleep disorder, or any parkinsonism features suggesting cerebral Lewy body disease. Given that his cognitive symptoms were noted to first occur in the last one to two years according to his wife, it is worth investigating the history of alcohol dependency and management. If the timelines coincide and quetiapine is prescribed as part of the management, Mr Leung's cognitive impairment may be related to his drinking problem, thus the unexpectedly poor performance on cognitive assessment. Another possibility that quetiapine was prescribed is REM sleep disorder, where a person affected may lose their temper during the night, which is interpreted as agitated behaviour. Donepezil 2.5 mg and thiamine 50 mg daily can be prescribed if the client is still on alcohol. However, it is advisable to observe the side effects of quetiapine and reduce the dosage after ascertaining the reason for the medication. Physicians may consider memantine if irritability is noted: alcohol has anxiolytic and sedative effects, and some patients with alcohol-drinking problems may have anxiety-prone personalities.

A strength in Mr Leung's case is that his ADL is still independent. The primary care team nevertheless needs to prevent further dysfunctions because of his psychiatric condition. Negative symptoms, such as demotivation, tiredness, and psychosomatic discomfort, may be easily induced. The primary care team should also assess carer stress and skills. It is possible that Mr Leung's wife is experiencing a high level of stress, which is common when caring for a spouse with cognitive impairment and possible psychiatric symptoms, and the primary care team should make sure that effective support is available when needed.

Case 089 Suicidal Ideation and Temper Tantrum

Mrs Yuen, a 67-year-old lady, presented with depressive mood, suicidal ideation, difficulty managing activities of daily living, and temper tantrums. Her husband complained about her stubbornness, easy temper tantrums, and irritability over minor matters. She was noted to scold her daughter, with whom she never had any problem previously; there was also an episode of her not being able to recognise her son, who has returned from overseas, and forgetting to collect rent for over three months for the properties she owns.

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Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 26/30 on MMSE, with no indication of cognitive impairment. Mrs Yuen's performance was normal in orientation to time (5/5), fair to place (4/5), normal in registration (3/3) and delayed recall (3/3), language (5/5), and visuospatial relationship (1/1), but impaired in calculation (2/5), and poor in three-step commands (1/3). Impairment was noted in the Clock Drawing Test (Figure 3.4).
ADL/IADL	For basic ADLs, Mrs Yuen needed her husband to help prepare her toothbrush and towel for grooming in the morning, although she was reported to refuse his help sometimes. For IADLs, she needed assistance with medication and was unable to cook or handle finances.
Staging and clinical rating	Staging and clinical rating were not completed.

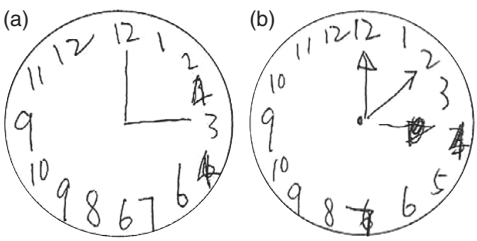

Figure 3.4 Findings from Mrs Yuen's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Mrs Yuen's husband reported noticing problems with money management for two years. She became passive and seldom talked to the family, developed a liking for sweets, and would sometimes ask for food non-stop. She gained weight recently and got lost once when she went out by herself. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
○ Recalling recent conversations
× Word finding
× Managing money and finances
× Managing medication independently
× Using transport

Mrs Yuen used to work in a trading company. She had received secondary education.

Physical Examination Findings

Palmomental reflex positive.

Investigations

SPECT showed unilateral right frontotemporal hypoperfusion.

Diagnosis

Frontotemporal dementia.

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Suggestions for the Primary Care Team

This is a case of frontotemporal dementia. The carer reported the mood and temper issues as the first symptoms. Mrs Yuen showed apraxia; it would be of moderate severity if it were an Alzheimer's disease; however, the MMSE score was not comparable with Alzheimer's disease. Her Clock Drawing Test result showed perseveration. Moreover, Mrs Yeung was apathetic. From the investigation, hypoperfusion in the right frontal lobe was noted, which matched the apathetic issue. Unilateral right frontotemporal hypoperfusion shown on SPECT is compatible with frontotemporal dementia, whereas symmetrical temporoparietal hypoperfusion would be expected in Alzheimer's disease. The MMSE score showed no impairment in language, yet the family carer reported the word-finding issue, showing that the MMSE is not sensitive in frontotemporal dementia. Therefore, the diagnosis is led by clinical symptoms and supported by psychometric testing and neuroimaging for atypical symptoms.

People with frontotemporal dementia may present at the onset with mood, behaviour, or personality changes, which can occur earlier than cognitive symptoms. Carers should be well prepared for the expected changes, including significant dysfunctions in verbal expression, mood swings, and rapid deterioration in cognitive functions (progressing much faster than typical Alzheimer's disease). The primary care team should work with the family to understand and become familiar with the person's habits, preferences, and character, so that when verbal expression becomes limited in the future, the family will still be able to understand her needs. Note that prohibiting eating can trigger an agitated mood; instead of stopping her from eating, providing finger food or snacks with low calories would help. Advance care planning with enduring powers of attorney (EPOA) appointed to handle the assets would be needed.

Case 090 Decline after Hospitalisation

Mr Ng, an 87-year-old gentleman, presented with concerns raised by his brother about his memory problem. He was noted to have declining short-term memory (e.g., forgetting to take his medication) and difficulty navigating previously familiar places.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Score 21/30 on MMSE, suggestive of cognitive impairment after adjusting for educational level. Mr Ng's performance was impaired in delayed recall (1/3) and calculation (2/5) and fair in orientation to time (3/5) and place (3/5); his performance was, however, normal in registration (3/3), language (5/5), three-step commands (3/3), and visuospatial relationship (1/1). He scored 13/30 on MoCA, suggesting cognitive impairment after adjusting for educational level. His performance was impaired in naming (1/3), abstraction (0/2), and delayed recall (0/5); fair in visuospatial/executive (3/5), attention (4/5), language (2/3), and orientation (3/6).
ADL/IADL	Mr Ng was independent in basic ADLs (Barthel Index 100/100). For IADLs, he needed supervision in taking medication (medications were prepared by the nurse weekly, and he needed to be reminded by calls) and community access; he was modified independent in handling finances and independent in other activities (Lawton IADL Scale: 51/56)

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Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 4, indicating mild dementia. He showed decreased knowledge of current and recent events; concentration deficit on serial subtractions; and a decreased ability to travel and handle finances. He seemed to be in denial of his deficits.

History Taken with Carer by Primary Care Physician

Mr Ng's brother reported noticing an insidious onset of memory problems in Mr Ng that had concerned him for about a year, with a more significant decline after his hospitalisation earlier this year. No delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

○ Remembering recent events
× Recalling recent conversations
○ Word finding
× Managing money and finances
× Managing medication independently
× Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Comorbidities of hypertension and spontaneous coronary artery dissection were reported. No family history of psychiatric disorders or dementia was reported. He had received secondary education.

Diagnosis

Delirium on cognitive frailty. Differential diagnosis: mild cognitive impairment.

Management

No medications were prescribed. He was recommended to join a centre-based programme with cognitively stimulating activities, for the maintenance of cognitive function and quality of life.

Suggestions for the Primary Care Team

As the deterioration happened after hospitalisation and the cognitive impairment appeared for only a year, with intact visuospatial function, Mr Ng's presentation is compatible with delirium on cognitive frailty: unresolved delirium could lead to post-operation cognitive decline. It would be useful to consider the time interval between his discharge and when the assessment was done: if the time interval is long, the likelihood that his performance was affected by delirium is lower. In any case, as delirium is usually reversible, it is recommended to observe for spontaneous improvement, with re-assessments, including cognitive tests, in three to six months' time. The team should also conduct a medication review.

At present, Mr Ng's cognitive performance on MMSE was satisfactory; although more obvious impairment was shown on MoCA, the Global deterioration scale rating showed only mild functional impairment, with largely independent ADL and IADL. Considering Mr Ng's relatively old age, the profile is more compatible with mild cognitive impairment or age-related cognitive frailty at this moment, although the

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condition could progress or worsen in the event of a change in his health condition. The primary care team is therefore advised to focus on maintaining a good health status, and physical health is a more important focus than other issues at this stage.

Case 091 Anticlockwise Clock

Ms Lo, an 89-year-old lady, presented with concerns raised by her daughter over her memory problems. Her daughter noted forgetfulness about recent events and frequent loss of personal belongings for about three years. Ms Lo has been aware of her own memory decline for about one year.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 20/30 on MMSE, suggesting cognitive impairment after adjusting for education level. Ms Lo's performance was impaired in delayed recall (0/3), visuospatial relationship (0/1), and orientation to time (2/5), fair in orientation to place (3/5), showed slight difficulties in calculation (4/5) but was normal in three-step commands (3/3), registration (3/3), and language (5/5). The Clock Drawing Test showed that she was unable to complete the drawing and placed the numbers anticlockwise (6/10). The clock copying task showed that she was able to read the clock (4/10) (Figure 3.5).
ADL/IADL	She was moderately dependent in basic ADLs (Barthel Index 87/100), walks with an umbrella, and was semi-independent in IADLs (Lawton IADL Scale 40/56): she needs assistance in taking medicine, meal preparation, and housekeeping; she needs company for community access, handling finances, and grocery shopping.
Depressive symptoms	Scored 9/15 on GDS-15, indicating significant depressive mood. She expressed worries about her health.
Staging and clinical rating	Scored 1/3 on Clinical Dementia Rating, suggesting mild dementia. She showed mild impairment in judgement and problem-solving, community affairs, home and hobbies, and personal care.

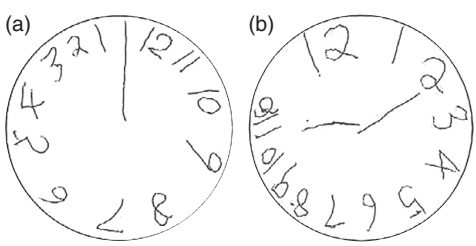

Figure 3.5 Findings from Ms Lo's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Ms Lo's daughter reported noticing memory problems in her mother that had concerned her for about one to two years. Delusional ideations were reported. Using the GPCOG

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Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
○ Managing money and finances
× Managing medication independently
× Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Ms Lo had hypertension. She was on amlodipine 2.5 mg daily, enalapril 10 mg daily, aspirin 100 mg daily, piperidine 20 mg twice a day, and simvastatin 20 mg at night. No family history of psychiatric disorders or dementia was reported. Ms Lo currently lives with a domestic helper. She had received primary education.

Physical Examination Findings

General examination revealed no affect or hygiene problem. No significant CVS and CNS findings.

Diagnosis

Mild to moderate Alzheimer's disease.

Management

Rivastigmine transdermal system 4.6 mg daily was prescribed. Ms Lo was recommended to join a specialised day care service for two days per week to receive structured and tailored intervention programmes and cognitively stimulating activities to delay deterioration and maintain quality of life.

Suggestions for the Primary Care Team

Ms Lo presented at an old age (89 years) with a typical impairment pattern, although her MMSE performance was quite preserved. Her performance in all cognitive domains was generally satisfactory, except for short-term memory. Her impairments appeared more significant in basic ADLs than in IADLs, which is not typical in Alzheimer's disease, although the effects of age, depressive mood, and frailty should be taken into consideration. The obvious depression may be linked with cognitive frailty and thus should be treated. Further investigations into any relationship between her delusional ideations and depressive mood are also warranted. Pseudodementia is the differential diagnosis. An antidepressant, such as escitalopram 5 mg at night-time, can be prescribed. Social and leisure activities that are cognitively stimulating, such as card games, ball games, and board games (or Mahjong) tailored to her interests may be more appealing and thus effective and can be recommended instead of more formal cognitive training or exercise. Ms Lo's overall functions can be expected to improve along with improvements in mood.

3.3 Alzheimer's or Other Dementias? When to Refer

Case 092 Memory Decline in Three Months

Mrs Kong, a 72-year-old lady, presented with concerns raised by her daughter about her declining memory. She was reported to be misplacing items and forgetting about appointment dates soon after being told.

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Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 26/30 on MMSE, suggesting no indication of cognitive impairment after adjusting for education level. Scored 20/30 on MoCA, suggesting mild cognitive impairment. Impairments were mainly noted in delayed recall. The Clock Drawing Test result was normal.
ADL/IADL	Mrs Kong is independent in all basic ADLs (Barthel Index 100/100) and most IADLs (Lawton IADL Scale 53/56), with modified independence in meal preparation, community access, and handling finances.
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 3, indicating mild cognitive impairment. Informants have become aware of the client's relatively poor performance in cognitive function. A concentration deficit was evident during assessment. She also showed a decreased ability to remember names when being introduced to new friends. There were mild to moderate anxiety symptoms.

History Taken with Carer by Primary Care Physician

Mrs Kong's daughter reported noticing memory problems in her mother that had concerned her for about two to three months, although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
○ Managing money and finances
× Managing medication independently
× Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Comorbidities of hypotension for over 30 years and osteoarthritis of the knees were reported. Mrs Kong lived alone. She had received a secondary education.

Diagnosis

Severe bradycardia on P/F with hypotension.

Management

Mrs Kong was already on memantine 5 mg prescribed by her private doctor. No further medication was prescribed pending the work-up. She was recommended to join a centre-based programme with cognitively stimulating activities, for the maintenance of cognitive function and quality of life.

Suggestions for the Primary Care Team

This case would require a case conference involving specialists. There are several points worth noting: the history of cognitive decline is short at only three months. Performance on MMSE was largely preserved, with intact visuospatial functioning and satisfactory performance in overall daily activities. Given the atypical presentations, a diagnosis of dementia cannot be given until other factors have been ruled out. Cognitive frailty may be involved, and poor attention and anxiety symptoms elicited during the clinical interview for staging suggest possible hidden mood problems. The primary care team should

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investigate further Mrs Kong's mental health, including her mood, by interviewing Mrs Kong and soliciting information from her family. Bradycardia and low blood pressure need further work-up, as a cholinesterase inhibitor is contraindicated. Review of medications, management of hypotension and bradycardia, neuroimaging, and close monitoring are recommended.

Case 093 No Concern for Personal Hygiene

Mr Cheng, an 82-year-old gentleman, presented with concerns raised by his daughter about his memory problem. He was noted to have a declining memory of recent events (e.g., whether he had eaten), difficulty finding his way, and showed little regard for his personal hygiene and attire.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 21/30 on MMSE, suggesting cognitive impairment after adjusting for education level. Mr Cheng's performance was impaired in orientation to place (1/5) and delayed recall (0/3), although he was able to recall items with cues (categorical); his performance was fair in orientation to time (3/5) and normal in registration (3/3), calculation (5/5), language (5/5), three-step commands (3/3), and visuospatial relationship (1/1). The Clock Drawing Test result was normal
ADL/IADL	Mr Cheng was independent in the most basic ADLs (Barthel Index 96/100) except for bladder control (leakage due to benign prostatic hyperplasia) and bowel control (occasional accident). He needed supervision in taking medication, meal preparation, and community access; was modified independent in housekeeping; and was independent in other IADLs (Lawton IADL Scale 49/56).
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 4, indicating mild dementia. He showed a concentration deficit on serial subtractions, and a decreased ability to travel and handle finances.
	Other behavioural symptoms were noted: for example, he was reported to often pick up dirty tissues and cigarette butts from the street and have poor hygiene and personal attire (urine and stool all over the flat, putting on dirty clothes, and dressing in rags). These occur frequently (once or more per day) at severe levels (the urge to hoard was very disturbing to him, and he had difficulty redirecting his attention), which also caused severe distress to others (his behaviours were described as very disruptive and a major source of distress for family members).

History Taken with Carer by Primary Care Physician

Mr Cheng's daughter reported noticing memory problems in her father that had concerned her for about a year. No delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

○ Remembering recent events

× Recalling recent conversations

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× Word finding
○ Managing money and finances
× Managing medication independently
○ Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Comorbidities of benign prostatic hyperplasia and thalassemia trait were reported. He was on terazosin. No family history of psychiatric disorders or dementia was reported. He had received a secondary education.

Physical Examination Findings

Mr Cheng appeared to have fair hygiene on a general examination, which was unremarkable. The heart sounded normal, with no murmur or carotid bruit noted.

Investigations

CBC, MCV, platelet, FBS, LDL, UA, creatinine, and ALT were ordered. Resulted CBC Hb 12.2, MCV 69, platelet 114, FBS 5.2, LDL 2.5, UA 0.15, creatinine 81, and ALT 23. ECG and CSR revealed mild upper thoracic scoliosis.

Diagnosis

Mild dementia with hoarding behaviour.

Management

No medication was prescribed at this stage due to the pending work-up. Mr Cheng was recommended to join a centre-based programme with cognitively stimulating activities for the maintenance of cognitive function and quality of life.

Suggestions for the Primary Care Team

Mr Cheng showed intact visuospatial ability but rather prominent disinhibition symptoms and poor awareness of personal hygiene; the presentation is more compatible with frontotemporal dementia than Alzheimer's disease. Low MCV is also of note, which may be thalassemia minor or iron deficiency. It is advisable to check against his alcohol-drinking history and family history of psychiatric symptoms. The use of selective serotonin reuptake inhibitors and/or valproate for managing behavioural symptoms can be considered. This case would benefit from a case conference and psychiatric referral to rule out psychiatric disorders.

Distressed behaviours and neuropsychiatric symptoms that are related to habits, such as hoarding and poor hygiene, generally do not occur over a short period of time. They often start in the form of minor problems or issues, such as needing reminders to get changed, mistaking dirty clothes as clean, hiding their own belongings at home, and refusing to throw away trash. Hoarding behaviours may reflect an underlying sense of increasing insecurity, depression, or anxiety. In Mr Cheng's case, as the distressed behaviours and neuropsychiatric symptoms are severe and well established and considering his good cognitive functions, including judgement and problem-solving, with deteriorated/deteriorating short-term memory, intervention strategies should be designed according to these strengths and weaknesses. Instead of aiming to correct and eliminate the well-established behaviours, the focus of intervention should be adaptive, with a goal to

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minimise the negative impact of these behaviours on Mr Cheng and his carers. Engaging Mr Cheng fully in well-structured, routine daily living activities, such as by offering full-day service in a day care centre for six days a week with scheduled activities, would help. Modifying the environment, such as by removing out of sight objects that are not needed (dirty clothes, unused utensils, etc.), can also be recommended. To minimise toileting behaviours in inappropriate places, the primary care team may advise the carers to ensure Mr Cheng can easily find his way to the toilet, with convenient accessible facilities, introduce a regular toileting schedule (e.g., toileting reminders at least once an hour), and scheduled showering or bathing at about the same time every day. For his habit of picking up dirty tissues and cigarette butts, carers may try to provide in-kind incentives and divert his attention by engaging him in activities that are meaningful to Mr Cheng.

Case 094 Hitting Wife in Sleep

Mr Chan, an 80-year-old gentleman, presented with memory impairment and aberrant behaviours over about two years. He was noted to have forgotten to switch off stoves, lost his way in the street, urinated in inappropriate places, and had visual hallucinations.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 21/30 on MMSE, suggestive of cognitive impairment after adjusting for education level. Mr Chan's performance was impaired in orientation to time (3/5) and place (3/5), calculation (3/5), three-step commands (1/3), and visuospatial relationship (0/1). His performance was, however, normal in registration (3/3) and delayed recall (3/3). The Clock Drawing Test showed significant impairment (Figure 3.6).
ADL/IADL	Mr Chan was independent in general ADLs; no incontinence was noted except that he would urinate suddenly in inappropriate places whenever in urge. He was modified independent in IADLs, had an incidence of getting lost when going out alone, and generally needed assistance in household tasks and meal preparation.
Staging and clinical rating:	Staging and clinical rating were not completed.

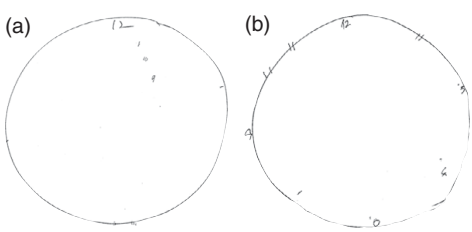

Figure 3.6 Findings from Mr Chan's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Mr Chan's daughter reported noticing memory impairment and aberrant behaviours for about two years and parkinsonism within one to two years. No delusional ideations were

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reported, although visual hallucinations were noted: Mr Chan would sometimes see children in his flat, which was not reported as a frightening experience. He was noted to have REM behaviour disorder for three years, and he would hit his wife (who has now passed away) in his sleep. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
× Managing money and finances
× Managing medication independently
× Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Comorbidities of hypertension and benign prostatic hyperplasia were reported. No family history of psychiatric disorders or dementia was reported. He had received two years of education.

Physical Examination Findings

On physical examination, Mr Chan showed parkinsonism features, a masked face, stooped posture, bradykinesia, and a shuffling gait.

Diagnosis

Cortical Lewy body disease.

Management

A cholinesterase inhibitor and low-dose carbidopa/levodopa were prescribed. Mr Chan is recommended to join a specialised dementia day care service, with structured activities and interventions for mood and quality of life, with carer support and education programmes.

Suggestions for the Primary Care Team

In cortical Lewy body disease, the primary symptoms can start with physical dysfunctions and psychiatric and psychological symptoms, which may occur earlier than cognitive symptoms. In the case of Mr Chan, his symptoms started in the form of aberrant behaviour, parkinsonism, and hallucinations, within the same time period (i.e., in the last one to two years) as memory problems were noted. At this stage, the primary care team should first attend to the impact of the disease on his physical functions, such as fall risk, sleeping quality, and safety. Mr Chan's deterioration in ADL functions may be caused by restricted mobility and slow reactions; giving him enough time to complete the ADL tasks may help. On the other hand, his condition would also be complicated by his physical impairments. For example, ongoing hallucinations and poor sleep quality can contribute to negative moods. The primary care team should pay attention to carer stress and intervene accordingly.

Case 095 Seeing Deceased Relatives

Mrs Yeung, a 92-year-old lady, presented with concerns raised by her husband about her memory problem, such as repeated questioning, misplacing items, forgetting whether she has eaten, and disorientation.

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Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 12/30 on MMSE, indicating cognitive impairment after adjusting for education level. Mrs Yeung's performance was impaired in orientation to time (0/5), delayed recall (0/3), calculation (1/5), three-step commands (1/3), and visuospatial relationship (0/1) and fair in orientation to place (3/5) and registration (2/3). Her performance was, however, normal in language (5/5). The Clock Drawing Test showed obvious errors in time denotation (Figure 3.7).
ADL/IADL	Mrs Yeung was largely independent in basic ADLs (Barthel Index 98/100), except that she needed minimal help in stair climbing. For IADLs, she was dependent in meal preparation; needed assistance in taking medication, external communication (only able to pick up calls), laundry (able to handwash own clothes), housekeeping (able to finish simple cleaning only), handling finances, and grocery shopping; and needed supervision in community access (Lawton IADL Scale 24/56).
Staging and clinical rating	Results suggest a Global Deterioration Scale (GDS) stage of 5, indicating moderate dementia. She showed decreased knowledge of current and recent events; a deficit in memory of her personal history; and an inability to recall a major relevant aspect of her current life: she required prompting to provide her home address (named previous addresses) and was unable to recall names of close family members; she was reported to have frequent disorientation in time and occasional difficulty in choosing proper clothing to wear for the weather, and she forgets whether she has eaten.

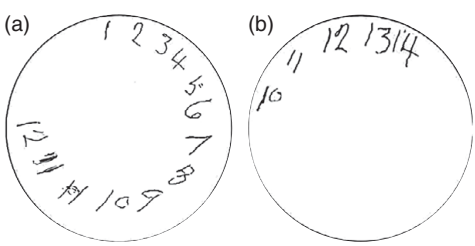

Figure 3.7 Findings from Mrs Yeung's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Mrs Yeung's husband reported noticing memory problems in his wife that had concerned him for more than a year. Delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

- ○ Remembering recent events
- × Recalling recent conversations
- ○ Word finding
- × Managing money and finances
- × Managing medication independently
- × Using transport

A clinical feature of complex visual hallucinations (occasionally seeing deceased relatives) of non-Alzheimer's dementia (Lewy body dementia) was noted. Comorbid

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arrhythmia was reported. No family history of psychiatric disorders or dementia was reported. She had received three to four years of education.

Investigations

CBP, ESR, R/LFT, calcium, vitamin B_{12}, folate, fasting sugar, fasting lipid, MSU × R/M and culture test, CXR, and ECG were ordered. A Brain CT scan was also ordered.

Diagnosis

Mild Alzheimer's disease.

Management

No medications were prescribed at this stage. Mrs Yeung was recommended to join a centre-based programme with cognitively stimulating activities for the maintenance of cognitive function and quality of life.

Suggestions for the Primary Care Team

This is a case of Alzheimer's disease with significant cognitive frailty from age. Despite atypical presentation (presence of hallucinations and onset at a relatively older age), it is recommended to treat Mrs Yeung's case as in Alzheimer's disease. Donepezil 2.5 mg can be prescribed to observe any changes in hallucination and cognition. Antipsychotics are not indicated, as Mrs Yeung has no distress or other negative emotions associated with the visual hallucination.

The presence of hallucinations may be related to Alzheimer's disease pathology, cognitive frailty, or other reasons, which should be further explored. The description of seeing deceased relatives in this case appeared to be a complex hallucination, which is quite uncommon in Alzheimer's disease. Physicians could investigate further the nature of the hallucination; for example, more information is needed regarding the primary experience more compatible with a simple hallucination (e.g., shadow) that was interpreted as her deceased relatives; whether the hallucination happens within a certain context, and if so, whether any specific time, place, and triggering factors could be identified. The possibility of these hallucinations happening around sleep (hypnagogic and hypnopompic hallucinations), or confusion of memories from dreams with reality should also be explored, especially if they trigger any negative moods or behaviours.

The cognitive deterioration and other symptoms have likely been present for more than a year. Although Mrs Yeung's cognitive impairment level is compatible with mild dementia, her orientation to place is better than expected. Her attention and social communication are preserved, which are Mrs Yeung's strengths at the moment. Given her good ADL, satisfactory IADL, and remaining ability to handle simple household tasks, her family should be advised to continue to involve her in daily living activities. Social and leisure activities that are cognitively stimulating, as compared with cognitive training or exercises that focus only on cognitive improvement, are better choices to enhance both cognition and quality of life.

Case 096 Vascular or Vitamin?

Mrs Lau, an 89-year-old lady, presented with concerns raised by her daughter about her memory problems. She was noted to be emotional, unable to recognise her own family, and

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forgetting the content of a conversation, and there was an incident when she went to the kitchen instead of the toilet. Her daughter also reported difficulties in word finding and slurred speech.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 6/30 on MMSE, suggestive of cognitive impairment after adjusting for education level. Mrs Lau's performance was impaired in orientation to time (0/5) and place (0/5), registration (1/3), delayed recall (0/3), attention and calculation (0/5), and visuospatial relationship (0/1) and was fair in language (3/5) and three-step commands (2/3). Mrs. Lau was unwilling to complete the Clock Drawing Test and likely would have had difficulty completing it.
ADL/IADL	For basic ADLs, Mrs Lau was dependent in stair climbing; was unsafe in dressing; needed moderate help in bathing; and needed minimal help in bed/chair transfer, hygiene, toileting, ambulation, and bowel and bladder control (Barthel Index 67/100). For IADLs, she was dependent in meal preparation, laundry, housekeeping, handling finances, and grocery shopping and needed assistance in taking medications (medications were prepared by daughter), external communication (able to pick up calls occasionally), and community access (Lawton IADL Scale 14/56).
Staging and clinical rating	Results showed a Global Deterioration Scale stage of 5, indicating moderate dementia. She was unable to recall a major relevant aspect of her current life, such as the address of her long-term residence and the names of family members; she also showed frequent disorientation to time or place. She required no assistance with toileting or eating but had difficulty choosing proper clothing to wear and had difficulty counting from 1 to 10.

History Taken with Carer by Primary Care Physician

Mrs Lau's daughter reported noticing memory problems in her mother that had concerned her for about three to four years, with an acute decline for a few months although no delusional ideations were reported. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

- × Remembering recent events
- × Recalling recent conversations
- × Word finding
- × Managing money and finances
- × Managing medication independently
- × Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Comorbidities of diabetes mellitus, hypertension, hypercholesterolemia, gout, cerebrovascular accidents, vitamin B_{12} deficiency, bilateral cataract, and hip replacement were reported. She was on a vitamin B_{12} supplement. No family history of psychiatric disorders or dementia was reported. She had received secondary education.

Investigations

CBP, R/LFT, calcium, vitamin B_{12}, folate, fasting sugar, and fasting lipids were ordered. CBP resulted in Hb 11.4, R/LFT Un 9.2 creatinine 151, calcium 2.27, vitamin B_{12} deficiency,

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fasting sugar 7.5, and fasting lipid TC 5.7 LDL 3.5, TG 2.8, and HDL 0.9. A CT scan revealed small vessel disease.

Diagnosis

Dementia, likely vascular dementia or due to low vitamin B_{12}; acute decline; probable delirium.

Management

No medications were prescribed due to pending further work-up. Mrs Lau was recommended to join a centre-based programme with cognitively stimulating activities, for the maintenance of cognitive function and quality of life.

Suggestions for the Primary Care Team

Mrs Lau's case is likely vascular (post-stroke) cognitive impairment or mixed dementia; the acute cognitive deterioration was potentially a small stroke, which showed improvement afterwards, while vitamin B_{12} deficiency may be a concomitant finding. Low-dose donepezil 2.5 mg can be started to observe any change in cognition and to replace vitamin B_{12} if the level is low. Memantine may also be considered on top of cholinesterase inhibitors for vascular dementia.

Slurred speech and other problems in verbal expression suggest that Mrs Lau is stepping into the late stage of dementia. At this stage, the focus should shift from improving functioning to enhancing the caring skills of carers and the quality of care for the person with dementia. Maintaining a stable mood, by engaging her in her interests through passive participation, such as playing her favourite songs at home, family gatherings, or outdoor activities such as a walk in the garden or a park, would help. Family carers should be equipped with caring skills for physical dysfunction as well, such as feeding and monitoring for any choking while eating, transferring skills (e.g., from bed to chair), and skin condition monitoring.

Case 097 Aggression as Key Complaint

Mr Yan, a 92-year-old gentleman, presented with concerns raised by his wife about his cognitive and temper problems. His wife complained of his use of offensive language and physical aggression, misplacing items and blaming others for stealing, forgetting to take medications, and being forgetful of events that happened the day before. He was also noted to have difficulty comprehending conversations.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 17/30 on MMSE, suggestive of cognitive impairment after adjusting for education level. Mr Yan's performance was impaired in orientation to time (1/5), delayed recall (1/3), and calculation (1/5) and was fair in orientation to place (3/5) and three-step commands (2/3). His performance was, however, normal in registration (3/3), language (5/5), and visuospatial relationship (1/1).
ADL/IADL	Mr Yan needed minimal help in feeding, ambulation, and stair climbing and was independent in other basic ADLs (Barthel Index 93/100). For IADLs, he was dependent in meal preparation (usually having lunch and dinner in a centre), laundry (unable to use the washing machine), housekeeping, handling finances (rarely using money), and grocery

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	shopping and needed assistance in taking medications (medications were prepared by wife), external communication (due to difficulty hearing), and community access (Lawton IADL Scale 14/56).
Staging and clinical rating	Results suggested a Global Deterioration Scale stage of 4, indicating mild dementia. He showed decreased knowledge of current and recent events, a concentration deficit on serial subtractions, and decreased ability to travel and handle finances.

History Taken with Carer by Primary Care Physician

Mr Yan's wife reported noticing memory problems in her husband that had concerned her for about two to three years. Delusional ideations were reported (others stealing from him). Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
× Word finding
○ Managing money and finances
○ Managing medication independently
○ Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. Comorbidities of hypertension, hypercholesterolemia, benign prostatic hyperplasia, cerebral vascular accident (approximately 40 years ago; informant was uncertain about date), and osteoarthritis (informant was unsure) were reported. No family history of psychiatric disorders or dementia was reported. He had received two to three years of education.

Investigations

Calcium, VDRL, and vitamin B_{12}, folate, and a CT scan were ordered.

Diagnosis

Frontotemporal dementia.

Management

No medications were prescribed due to pending further work-up. Mr Yan was recommended to join a centre-based programme with cognitively stimulating activities, for the maintenance of cognitive function and quality of life.

Suggestions for the Primary Care Team

As behavioural problems were the key symptoms in this case, with delusional ideations, a frontal type of dementia rather than Alzheimer's disease should be considered. Management of this case would benefit from a case conference involving specialists.

In Mr Yan's case, the carer's stress is a concern. Considering that his wife is an older person herself, she may not be able or suitable to remain in the primary carer role, especially with the verbal and physical aggression that can cause great distress to her. The primary care team should discuss with the family regarding the need to refer to social services for long-term care arrangements. His delusional ideations can be helped with the

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use of antipsychotics together with a caring strategy. Antipsychotics or valproate are indicated for severe behavioural symptoms. His family should also be advised on strategies that can minimise the distressed behaviours and neuropsychiatric symptoms of dementia, such as by providing him with a locked cupboard or drawer where he can place his belongings. The primary care team should explore family support and relationships in tailoring the care plan.

Case 098 Soft Tissue Mass on MRI

Mrs Chan, a 77-year-old lady, presented with concerns raised by her son about her memory problem. She was reported to be forgetful about conversation content and appointment dates, misplacing personal items and being suspicious of others, and having slight difficulties in money management. Mrs Chan was also aware of her own memory decline.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 16/30 on MMSE, suggestive of cognitive impairment after adjusting for education level. Mrs Chan's performance was impaired in orientation to time (1/5) and place (2/5), calculation (1/5), and visuospatial relationship (0/1) and was fair in delayed recall (2/3) and three-step commands (2/3). Her performance was, however, normal in registration (3/3) and language (5/5). In the Clock Drawing Test, she refused to draw 3 o'clock arms and showed difficulty in executive function (6/10), but improved in clock copying (2/10) (Figure 3.8).
ADL/IADL	Mrs Chan was independent in all basic ADLs (Barthel Index 100/100) and IADLs (Lawton IADL Scale 56/56).
Depressive symptoms	Scored 4/15 on GDS-15; no suggestion of significant depressive mood.
Staging and clinical rating	Scored 0.5/3 on Clinical Dementia Rating, indicating questionable dementia. She had mild impairment in the memory, orientation, and community affairs domains.

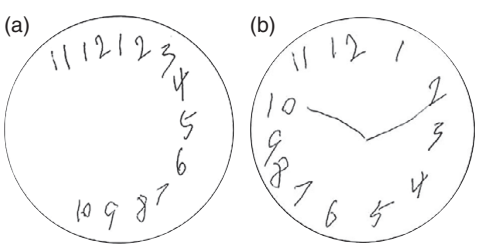

Figure 3.8 Findings from Mrs Chan's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Mrs Chan's son reported noticing memory problems in his mother that had concerned him for about a year. Delusional ideations were reported (others stealing things from her). Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

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× Remembering recent events
○ Recalling recent conversations
○ Word finding
○ Managing money and finances
○ Managing medication independently
○ Using transport

There were no additional clinical features to consider for non-Alzheimer's dementia. No comorbidity or family history of psychiatric disorders or dementia was reported. She did not receive any formal education.

Physical Examination Findings

General examination revealed no depressive-looking mood/affect problem, but showed general hygiene problems. CVS findings revealed BP 114/65 mm Hg.

Investigations

CBP, ESR, R/LFT, calcium, VDRL, vitamin B_{12}, fasting sugar, MSU × R/M and culture test, CXR, and ECG were ordered. All investigations were normal, except that CXR revealed cardiomegaly, and ECG revealed LVH and ST depression. An MRI plain scan revealed a 2.4 cm × 1.5 cm lobulated soft tissue mass over the cerebellopontine angle extension to the right medial temporal extra acid region and possible meningioma.

Diagnosis

Intracranial tumour.

Management

No medications were prescribed due to pending further work-up. Mrs Chan was recommended to join a specialised day care service for two days per week, with structured and tailored intervention programmes and cognitively stimulating activities to delay cognitive deterioration and maintain her quality of life.

Suggestions for the Primary Care Team

With the abnormal MRI results and considering the relatively young age of Mrs Chan, her clinical suspiciousness, unusual symptoms, and self-awareness, Alzheimer's disease is unlikely. Advanced imaging is recommended. This case would benefit from a case conference involving specialists, and a referral to a neurosurgeon is indicated. Mrs Chan's support appeared to be good, likely with good care and a high level of awareness from her son, which explained the satisfactory overall functions and very mild impairment, including cognition, physical, and ADL/IADL functioning. The primary care team is recommended to observe her cognition until a clear picture of the brain tumour is available and reassess after Mrs Chan's brain tumour is treated, to find out the actual impact of the tumour on her functioning.

Case 099 Shouting at TV

Mr Chan, a 65-year-old gentleman, presented with complaints from his wife about his personality change since around two years ago. He was noted to have mood swings and

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easy temper outbursts. He was also reported to be forgetful, asking questions repeatedly, and unable to recall recent events such as what he had for lunch.

Findings from Screening Assessments by Allied Healthcare and Social Care Team

Cognitive functioning	Scored 18/30 on MMSE, indicating cognitive impairment after adjusting for educational level. Mr Chan's performance was impaired in orientation to place (2/5), calculation (1/5), and was fair in delayed recall (2/3) in orientation to time (3/5), and three-step commands (2/3). His performance was, however, normal in registration (3/3), language (5/5), and visuospatial relationship (1/1). The Clock Drawing Test showed some impairment (Figure 3.9).
ADL/IADL	For basic ADL, Mr Chan was walking with a stick and needed assistance in bathing, changing clothes, and grooming (domestic helper prepares towel and toothbrush). For IADLs, it was noted that his wife handles all financial matters for him.
Staging and clinical rating	Staging and clinical rating were not completed.

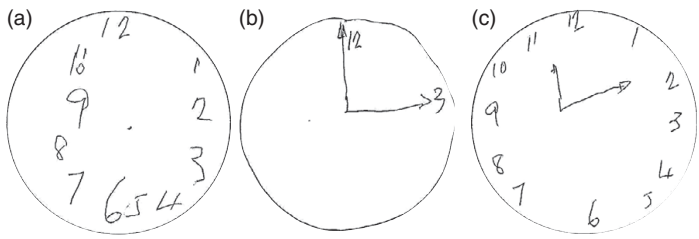

Figure 3.9 Findings from Mr Chan's Clock Drawing Test. (a) Clock Drawing (3 o'clock). (b) Clock Drawing (3 o'clock). (c) Clock Copying (10 past 10)

History Taken with Carer by Primary Care Physician

Mr Chan's wife reported noticing personality changes and temper outbursts that had concerned her for about two years, although no delusional ideations were reported. There were episodes when Mr Chan's behaviours appeared abnormal to his wife: he would shout at the TV when it was showing a violent scene, use an umbrella to hit his wife, and take a lot of toilet paper whenever he went to the toilet. He was also noted to be wandering and unable to sit still for more than 30 minutes. He had a minor stroke five years ago. He received a secondary school (F.3) level of education. Using the GPCOG Informant Interview, the following areas were noted to show more trouble (×) or were preserved (○) compared to about two years ago:

× Remembering recent events
× Recalling recent conversations
○ Word finding
× Managing money and finances
× Managing medication independently
○ Using transport

No family history of psychiatric disorders or dementia was reported. Mr Chan was a merchant and owned an advertising company. He was retired, and the company was

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passed down to one of his two sons. He lived with his wife and a domestic helper. His wife expressed a high level of stress. Mr Chan had received approximately nine years of formal education.

Diagnosis

Frontotemporal dementia.

Suggestions for the Primary Care Team

In this case of younger-onset dementia (at the age of 65 years), the first symptom observed is personality related; impaired visuospatial ability was also evident in the Clock Drawing Test. The carer reported that the violence and emotional reactions were triggered after watching a violent scene. This is a case of frontotemporal dementia, and a referral to secondary care is recommended for a work-up with advanced neuroimaging, usually requiring a functional scan (e.g., SPECT). In frontotemporal dementia, primary symptoms are often related to mood and behaviours instead of cognitive impairment. Although the general functioning of Mr Chan remained satisfactory, the primary care team should work with his carers to ensure preparedness for future changes in his condition, including the onset of various dysfunctions such as language, mood swings, and rapid deterioration of cognitive and other functions, as compared with the gradual decline that would be expected in Alzheimer's disease.

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