

Medical Problems:
Standard answer: <ol style="list-style-type: none">1. Cerebral infarction at the right precentral gyrus of unknown origin2. Hypertension
Human Prompts: <p>Can you provide me with an exhaustive list of the medical problems of this patient?</p>
ChatGPT-4: <ol style="list-style-type: none">1. Cerebral infarction: The patient was diagnosed with cerebral infarction at the right precentral gyrus, which led to the sudden onset of difficulty in moving his left hand.2. Hypertension: The patient has a history of hypertension, which requires ongoing monitoring and management.3. Diabetes mellitus: The patient has a history of diabetes mellitus, which requires ongoing monitoring and management.
Medical Management Plans:
Standard answer: <ol style="list-style-type: none">1. Diagnosis of stroke type2. Antiplatelet treatment3. To find out the origin of thrombus and start the specific treatment4. To rule out exacerbating pathogenesis including arterial dissection, severe stenosis or unstable plaque, and intracardiac thrombosis5. Better control for comorbidities, including hypertension and diabetes mellitus
Human Prompts: <p>Can you provide me with an exhaustive list of the medical management plan for this patient?</p>
ChatGPT-4: <ol style="list-style-type: none">1. Continue antiplatelet treatment: This is initiated to prevent further complications related to thrombosis.2. Blood pressure management: Regular monitoring and medication adjustments as necessary to maintain optimal blood pressure levels, given the patient's history of hypertension.3. Blood glucose management: Regular monitoring and medication adjustments to maintain optimal blood glucose levels, given the patient's history of diabetes mellitus.4. Medication review and management: Regularly review and adjust the patient's medications, including those for hypertension and diabetes, as well as any new medications prescribed after the cerebral infarction.5. Routine follow-up appointments: Schedule regular follow-up appointments with the patient's primary care provider and specialists to monitor their progress and adjust the medical management plan as necessary.6. Education and counseling: Provide the patient with information about their condition, its management, and potential complications, as well as counseling on lifestyle modifications (e.g., diet, exercise, stress management) that may help reduce the risk of future events.7. Multidisciplinary team approach: Collaborate with a team of healthcare professionals, including rehabilitation specialists, to create and implement a comprehensive care plan addressing the patient's medical and rehabilitation needs.

Comments:

ChatGPT has exhibited its ability in making a straightforward and precise medical diagnosis in this scenario, while also highlighting several crucial considerations and general principles for

managing medical issues. Additionally, it addressed the risk factors associated with initiating rehabilitative treatments at the very acute phase.

Rehabilitation Problems:
Standard answer: <ol style="list-style-type: none">1. Left hemiparesis2. ADL difficulty3. Decreased endurance in using paretic hand4. To return to work
Human prompts:
Can you provide me with an exhaustive list of the rehabilitation problems for this patient?
ChatGPT-4: <ol style="list-style-type: none">1. Left hemiparesis affecting the left upper limb2. Impaired motor function in the left hand, including grip strength3. Mildly impaired sensory function in the left hand (thermal and touch sensation)4. Challenges in performing work-related tasks with the left hand, such as object transfer and document handling5. The need to adapt to potential changes in daily and work-related activities due to the cerebral infarction and its effects on the left hand
Rehabilitation Management Plans:
Standard answer: <ol style="list-style-type: none">1. Occupational therapy for assessment of upper limb function using battery such as Simple Test Evaluation Function (STEF), instrumental ADL training and vocational rehabilitation resembles his current work.2. Physical therapy for functional training for a range of motion, dexterity, reduction of synergy pattern, endurance, and bimanual movement, and instruction of self-training, and applied gait training outside of the ward and stairs, endurance training.3. Negotiate with his workplace for modification of worktime and length by the rehabilitation team.
Human prompts:
Can you provide me with an exhaustive list of the rehabilitation management plan for this patient?
ChatGPT-4: <ol style="list-style-type: none">1. Physical therapy: Interventions to improve left hand motor function, grip strength, and sensory function, including range of motion exercises, strengthening exercises, fine motor exercises, and sensory re-education exercises.2. Occupational therapy: Work-related task analysis, adaptive equipment training, energy conservation strategies, and home safety and activities of daily living (ADL) assessments to help the patient adapt to potential changes in daily and work-related activities.3. Speech-language therapy: If speech, language, or cognitive deficits are identified, targeted therapy for specific impairments and communication strategies may be provided, along with involving the patient's family or caregivers for support.4. Patient education: Teach the patient about their condition, its management, and potential complications, as well as the importance of adhering to the rehabilitation program.5. Goal setting: Establish realistic, achievable rehabilitation goals in collaboration with the patient, focusing on improving hand function, sensory function, and facilitating a safe and timely return to work.

6. Regular progress monitoring and adjustments: Continually assess the patient's progress and adjust the rehabilitation plan as necessary based on their needs and goals.
7. Multidisciplinary team approach: Collaborate with a team of healthcare professionals, including medical specialists, to create and implement a comprehensive care plan addressing the patient's medical and rehabilitation needs.

Comments:

ChatGPT successfully identified rehabilitation problems and suggested suitable plans for rehabilitation management. However, there seems to be a divergence between the standard commentary and what ChatGPT-4 suggests. This could be due to the fact that the case description presented didn't indicate any gait abnormalities in the patient, even though in reality, patients like these often require gait training. Despite this, it's significant that ChatGPT acknowledged the potential for speech-language or cognitive impairments not explicitly mentioned in the case description. It went on to propose interventions involving speech-language therapies.

Risk Management Plans:

Standard answer:

1. Hemorrhagic status dues to antiplatelet treatment.
2. Avoid large and intense movement of his neck to prevent exacerbation dues to arterial dissection and A-to-A embolism before ruling it out.
3. Avoid sudden posture change to prevent hemodynamic infarction dues to severe arterial stenosis before ruling it out.
4. Occurrence of arrhythmia upon the possibility of thrombosis dues to pAF.

Human prompts:

Can you provide me with an exhaustive list of the risk management plan for this patient?

ChatGPT-4:

1. Monitor vital signs and medical conditions: Regularly check blood pressure, blood glucose levels, and other relevant health indicators, adjusting medications and management strategies as needed.
2. Medication adherence: Ensure the patient is taking their medications as prescribed for hypertension, diabetes, and any other conditions, including antiplatelet treatment for thrombosis prevention.
3. Lifestyle modifications: Encourage the patient to adopt a healthy lifestyle, including a balanced diet, regular exercise, stress management, and smoking cessation if applicable.
4. Fall prevention: Assess the patient's home and work environments for fall hazards, and recommend strategies or modifications to reduce the risk of falls.
5. Injury prevention: Educate the patient on safety measures to prevent injuries related to impaired left hand function, such as using adaptive equipment or modifying tasks.
6. Psychological well-being: Monitor the patient's mental health and provide appropriate support or referrals if signs of depression, anxiety, or other emotional issues arise.
7. Regular follow-up appointments: Schedule regular appointments with the patient's primary care provider and specialists to monitor their progress and adjust the medical management plan as necessary.
8. Patient education: Teach the patient about potential complications, warning signs of worsening conditions, and when to seek medical help.

Comments:

ChatGPT provided a more comprehensive risk management plan in this case. It appropriately emphasized the importance of multidisciplinary participation and consideration in risk management approaches.

Rehabilitation Goals:
Standard answer: <ol style="list-style-type: none">1. To achieve independence in his ADL and gait outside.2. Return to work, possibly with a slight modification of work style.3. Short-term recovery in sensorimotor impairment could be expected. Two weeks will be enough for him to get back to work.
Human prompts: Can you provide me with an exhaustive list of the rehabilitation goals for this patient?
ChatGPT-4: <ol style="list-style-type: none">1. Improve left hand motor function: Increase strength, coordination, and dexterity in the left hand, with a focus on tasks required for the patient's occupation.2. Improve left hand sensory function: Enhance thermal and touch sensation in the left hand to facilitate better hand use and reduce the risk of injury.3. Restore independence in activities of daily living (ADL): Enable the patient to perform daily tasks without assistance, focusing on those activities affected by the left hand impairment.4. Facilitate a safe and timely return to work: Collaborate with the patient and their employer to identify necessary accommodations or modifications to help the patient return to their job as early as possible.5. Promote patient self-management: Educate the patient on their condition, its management, and strategies for self-care, helping them become an active participant in their rehabilitation process.6. Optimize quality of life: Address any psychosocial, emotional, or lifestyle factors that may impact the patient's overall well-being and ability to engage in meaningful activities.

Comments:

The rehabilitation goals seem appropriate for this case.

Physical Therapy Prescriptions:
Human prompts: Could you also provide me with an exhaustive list of physical therapy prescriptions?
ChatGPT-4: <ol style="list-style-type: none">1. Range of motion exercises: Passive and active exercises to maintain and improve the range of motion in the affected joints, particularly the left hand and wrist.2. Strengthening exercises: Progressive resistance exercises targeting the muscles of the left hand and forearm to improve grip strength and overall function.3. Fine motor exercises: Tasks focusing on dexterity, coordination, and manipulation of small objects to enhance the patient's ability to perform work-related tasks and ADLs.4. Sensory re-education: Techniques to help the patient regain thermal and touch sensation in the left hand, such as graded exposure to different textures and temperatures.5. Mirror therapy: Using a mirror to create visual feedback of the unaffected hand performing movements, which can help improve motor function in the affected hand.6. Electrical stimulation: Application of low-level electrical currents to stimulate muscle contractions and improve motor function in the affected hand.

7. Gait and balance training: Although the patient's gait and balance appear to be intact, it may be necessary to address any subtle impairments or compensatory strategies that could affect long-term function and safety.

8. Home exercise program: Design a personalized exercise regimen that the patient can perform at home to supplement their in-clinic therapy sessions and facilitate progress.

Comments:

The physical therapy prescriptions recommendations proposed by ChatGPT seem to be appropriate for this case, considering the rehabilitation problems and goals. Interestingly, despite not initially incorporating gait disturbance in the rehabilitation management plan as we mentioned in our previous comments, ChatGPT eventually considered it when providing recommendations for physical therapy. It appears that precise and tailored prompts might enhance ChatGPT's response to formulate accurate management strategies. Nonetheless, considering the potential variability in physical therapy methods among therapists, it is advisable for licensed physiotherapists to devise the specific training regimen.

Occupational Therapy Prescriptions:

Human prompts:

Could you also provide me with an exhaustive list of occupational therapy prescriptions?

ChatGPT-4:

1. Task analysis: Assess the patient's work-related tasks and activities of daily living (ADL) to identify areas where they may require assistance or adaptation due to left-hand impairment.
2. Adaptive equipment: Introduce and train the patient in the use of adaptive equipment or tools, such as built-up handles, modified keyboards, or writing aids, to support their ability to perform work-related tasks and ADLs.
3. Energy conservation strategies: Teach the patient techniques for managing their energy levels throughout the day, such as pacing, task simplification, or prioritizing activities.
4. Home safety and ADL assessments: Evaluate the patient's home environment for safety hazards and recommend modifications or adaptations to support their independence and safety in daily activities.
5. Ergonomic assessments and modifications: Assess the patient's workplace and make recommendations for ergonomic adjustments, such as specialized seating or equipment positioning, to minimize strain on the affected hand.
6. Fine motor and coordination training: Provide exercises and activities to improve the patient's fine motor skills, dexterity, and coordination in the affected hand.
7. Cognitive and perceptual training: If cognitive or perceptual deficits are identified, provide targeted interventions to address these areas and support the patient's ability to engage in work-related tasks and ADLs.
8. Vocational counseling and return-to-work planning: Collaborate with the patient, their employer, and other healthcare providers to develop a realistic plan for the patient's return to work, including any necessary accommodations or modifications.

Comments:

OT prescriptions emphasize “what matter to patients” rather than the biochemical approaches outlined in PT prescriptions. From this viewpoint, the OT prescriptions generated by ChatGPT seem quite professional. However, similar to the PT prescriptions mentioned earlier, since

occupational therapy approaches can also differ among therapists, it is advisable for licensed occupational therapists to design specific training programs.

Speech-Language Therapy Prescriptions:
Human prompts:
Do you think this patient requires speech-language therapy or dysphagia management?
ChatGPT-4:
Based on the information provided, there is no indication that the patient is experiencing speech, language, or swallowing difficulties. The patient's primary concern is the sudden onset of difficulty in moving his left hand. Therefore, speech-language therapy or dysphagia management may not be required at this time. However, it is important to note that I am not a medical professional, and this assessment should not replace the advice of a licensed healthcare provider. If the patient were to develop speech, language, or swallowing issues during the course of their recovery, it would be essential to consult a speech-language pathologist for a comprehensive evaluation and appropriate intervention.

Comments:

This recommendation is appropriate for this case. It appears that there is no need for SLP support for this patient at this time.

Orthotics and Assistive Device Recommendation:
Human prompts:
Based on the patient's condition, do you think they would benefit from orthotics or an assistive device? If so, please provide your recommendation.
ChatGPT-4:
Based on the information provided, the patient has difficulty in moving his left hand but is independent in his activities of daily living (ADL) and gait, and no gait abnormalities were observed. Thus, orthotics or assistive devices for mobility may not be necessary at this time. However, the patient could potentially benefit from assistive devices to support left-hand function in work-related tasks and ADLs. An occupational therapist could recommend specific devices tailored to the patient's needs, such as: 1. Adaptive writing utensils: Pen grips or adapted pens could help the patient write more easily despite the reduced strength and dexterity in their left hand. 2. Built-up handles: These can be attached to utensils, toothbrushes, and other tools to provide a more comfortable grip and improve the patient's ability to perform self-care tasks. 3. Modified keyboard or typing aids: A specialized keyboard or typing aid could help the patient maintain productivity at work by allowing them to type more easily with their affected hand.

Comments:

This recommendation is suitable for this case. Although no functional deficits have been identified that necessitate the use of orthotics or assistive devices for this patient, self-help aids and a splint may be required to enhance work-related tasks and ADLs. This approach is also mentioned in the occupational therapy prescriptions section.

Recommendations in Psychology, Sociology, Interpersonal Relationship or Other Relevant Factors:

Human prompts:

If there are any concerns related to the patient's psychology, sociology, interpersonal relationships, or other relevant factors that require intervention, could you please provide some recommendations?

ChatGPT-4:

1. Emotional support and counseling: The patient may experience feelings of anxiety, depression, or frustration due to the sudden changes in their physical abilities. Providing emotional support, coping strategies, and, if needed, referral to a mental health professional for counseling could be beneficial.
2. Support group participation: Encourage the patient to join a local stroke support group or online community where they can connect with others who share similar experiences, exchange information, and receive encouragement.
3. Family involvement: Engage the patient's family in the rehabilitation process, providing them with education and support, as well as guidance on how to assist the patient in achieving their rehabilitation goals.
4. Communication with the workplace: Collaborate with the patient and their employer to develop a return-to-work plan, including accommodations or modifications that might be necessary to support the patient's successful reintegration into their work environment.
5. Leisure and social activities: Encourage the patient to maintain or re-engage in leisure and social activities that they enjoyed before the stroke, possibly with adaptations or modifications to accommodate their current abilities.
6. Community resources: Help the patient connect with local resources and services that can support their ongoing rehabilitation and social integration, such as accessible transportation, home care services, or adapted recreation programs.

Comments:

This recommendation is appropriate for this case. However, the specific treatment plan should be developed by licensed professionals from various fields.

International Classification of Functioning, Disability, and Health (ICF):

Human prompts:

Please provide a table that includes the relevant information and corresponding ICF codes.

ChatGPT-4:

Category	ICF Code	Information For the Patient
Body Functions	b760	Control of voluntary movement, left hand
	b730	Muscle power functions, left hand
	b140	Memory functions (if cognitive issues arise)
Body Structures	s730	Structure of upper extremity, left hand
Activities and Participation	d440	Fine hand use, including object manipulation
	d450	Walking and moving independently
	d850	Remunerative employment (office work)
	d760	Family relationships
Environmental Factors	e310	Support from immediate family (wife and daughter)

	e580	Health services, systems, and policies
Personal Factors (not coded in ICF)	N/A	Age: 62 years old
	N/A	Occupation: Office worker at a bank
	N/A	Medical history: Hypertension and diabetes mellitus

Comments:

We conducted a thorough review of the ICF code, comparing it with this table produced by the GPT-4 model. The three-digit codes were accurately selected, aptly representing the aspects of functioning, disability, and health. Intriguingly, we found no discrepancies in the ICF code concerning the inclusion criteria. Furthermore, the personal factors, which were not delineated in the ICF code, were included in the description. However, an error was uncovered when reviewing the case record in the body structures category (s730). The patient had suffered a stroke, and the original impairment should have been classified as affecting the right precentral gyrus (s110.1), as outlined in the case section. Instead, the table displayed the damage as being in “the upper extremity, left hand.”

Supplementary Table. Stroke Impairment Assessment Set

	Upper Extremity	Lower Extremity
Motor function		
Proximal	0-5 (Finger function)	0-5 (Hip flexion)
Distal	0-5 (Knee-mouth)	0-5 (Knee extension) 0-5 (Foot tap)
Muscle tone		
DTR	0-3	0-3
Tone	0-3	0-3
Sensory function		
Touch	0-3	0-3
Position	0-3	0-3
Range of motion	0-3 (shoulder abd)	0-3 (ankle df)
Pain	0-3	
Trunk		
Verticality	0-3	
Abdominal MMT	0-3	
Higher cortical function		
Visuospatial	0-3	
	0-3	

Speech	
Unaffected side function	
Grip strength	0-3
Quadriceps MMT	0-3
Total score	76

Abbreviations: DTR, deep tendon reflex; shoulder abd, shoulder abduction; ankle df, ankle dorsiflexion; MT, manual muscle testing.