

Carpal tunnel syndrome patient case study



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NGR 6202L: ADVANCED ADULT-GERO PRACTICUM

Demographic Information:

Initials of Patient: A. R.

Patient Age: 45

Patient Gender: Male

Patient Ethnicity: White-American

Initials of Provider: L. P.

Clinical Setting: Conviva Flagler

Insurance: Private – Avmed

Patient Status: Established

Chief Complaint:

“ I have been feeling numbness, tingling, and pain in my right hand with the first three digits of my hand involvement for the last 2 days”

History of Present Illness:

A. R. is a 45-year-old male that comes to the clinic with a history of pain with tingling and numbness in the right hand with thumb, index and middle finger involvement that started 2 days ago while he was at work. The patient describes the pain as “ needles and pins”. The discomfort gets exacerbated as he does repetitive computer work and gets mildly relieved with handshaking and change of positions. A. R. is an established patient at the

clinic that has a desk job at a local insurance company. He has been taking Tylenol 500mg for the past day with little symptom relief. Patient denies any recent fall or trauma to the involved extremity. Denies shortness of breath, chest pain, headaches or recent infection.

Pain History:

Location: Right hand

Quality: Burning

Severity: 4/10 pain scale

Duration: Intermittent

Radiation: None

Timing: Started 2 days ago

Context: While working

Relieving Factors: Tylenol 500mg Q6hr PRN, hand change of positions

Exacerbating Factors: Repetitive hand activities

Associated Symptoms: Numbness, tingling

Review of Systems (Symptoms Reported by patient during Comprehensive History):

Constitutional: No gain or weight loss, weakness, fatigue, fever, chills or sweating

Head/face: Denies headache, sinus pressure or fullness, lumps, trauma, vertigo, dizziness

Eyes: Denies visual changes, double vision, decrease in clarity or sharpness in vision or eye pain

Ears: Denies any hearing loss, pain, drainage or tinnitus.

Nose: Denies nosebleeds, nasal discharge or nasal congestion

Mouth/Throat/ Neck: Denies swallowing impairment, cough after swallowing, sore throat and hoarseness. No neck edema, pain, or lumps. No bleeding gums, ulcers or sores in the mouth.

Respiratory: Denies shortness of breath or cough. No cough and/or sputum production, night sweats or hemoptysis

Breast: Denies any abnormalities

Cardiac: Denies chest pain or palpitation, activity intolerance, abnormal sweating, squatting, pallor or cyanosis

GI: Denies abdominal pain, anorexia, nausea or vomiting, denies constipation or diarrhea.

GU: Denies dysuria or hematuria, flank or suprapubic pain.

Reproductive (Male): Sexually active. Monogamous. Denies penile discharge, STD history, testicular pain or mass or decreased libido.

Musculoskeletal: Patient complains of right-hand numbness, tingling and “needles and pins” pain with digits 1, 2 and 3 involvement. Aside from that denies muscle pain, back pain or joint pain. Denies any weakness or muscle spasm.

Skin/ Integument: Denies rash, hives, itching, the emergence of moles or nevi, dry or scaly skin

Psychiatric: Denies mood changes, nervousness, depression or anxiety

Neuro: Tingling and prickling of the right hand with associated numbness of fingers 1, 2 and 3. Denies headache, physical or sensory deficits, syncope, paralysis, or ataxia.

Endocrine: No tremor, palpitations, intolerance of heat or cold, polyuria, polydipsia, polyphagia, diaphoresis, exophthalmos, goiter.

Hematologic/Lymphatics: No spontaneous or excessive bleeding, fatigue, enlarged or tender lymph, fever nodes, pallor, history of anemia.

Allergic/Immunologic: Denies any known drug, food or environmental allergies. Denies seasonal allergies.

Past History (include dates):

PMH:

- Dyslipidemia (LDL – 158, 2018)

PSH:

- None

Psychiatric Hx:

- None

Hospitalizations:

- No recent hospitalizations.

Medications:

- Atorvastatin 10mg PO HS daily

Dietary Hx:

- Eats regular diet.

Immunizations:

- Flu vaccine (09/2018)
- Td vaccine (05/2015)
- Hepatitis B (2012)

Health Promotion:

Colonoscopy/Prostate (PSA): Colonoscopy not indicated at this time. PSA – 3.1 ng/ml (2018)

BP check: Checks regularly with normal levels

Cholesterol: 181 mg/dl, LDL 158 mg/dl (10/2018)

Annual Physical: 10/2018

Eye Exam: 02/2018

Dental: Recent dental exam or cleaning (2018)

Functional Status: Independent

Family History:

Grandparents: Grandparents passed away from unknown causes.

Parents: Mother 66 years-old with history of Osteoporosis and hypothyroidism. Father 68 years-old with history of hypertension and dyslipidemia.

Siblings: Younger brother 32 years-old with no past medical history

Children: Daughter 5 years-old

Social History:

Cultural Background: White-American

Spiritual History/Religious Affiliation and Practices: No preferred religious practices.

Activities of Daily Living/Hobbies/Interests: Watch Netflix and play cards with his daughter

Type of Family: Nuclear

Marital Status: Married

Work History: Sales manager at a local insurance company

Financial History: No financial concerns

Sexual History/Orientation: Heterosexual

Use of alcohol, smoking or recreational drugs: No smoking, recreational drug use or alcoholic drinks ingestion including social drinking

Living Arrangements: Lives at a house with his wife and daughter

Travel History: No current travel history

Social Support: Wife, brother, and parents

Determine Which LEVEL of HISTORY TAKING (Choose one):

Comprehensive HPI (4 or more findings or status of 2 or more chronic/inactive); ROS 10-14; PFSH 2-3 areas

Detailed HPI (4 or more findings); ROS 2-9 systems; PFSH one

Expanded Problem Focused HPI (1-3 Findings); ROS1 or more; PFSH N. A.

Problem Focused HPI (1-3 findings); ROS N. A; PFSH N. A

OBJECTIVE DATA (10 points); GRADE RECEIVED _____

Vital Signs: Temp 98. 3 F, HR 69, BP 111/76, RR 13

Oxygen Saturation: 98% on room air

Ht: 5'8Wt: 175 lbs. BMI: 23. 1 (WNL)

Constitutional:

General: Good posture, well groomed, adequate nutritional state, consistent chronological and physical age, adequate emotional state, good family support, adequate communication skills. No acute distress noted.

Physical Examination:

Head/face: Normocephalic, atraumatic, no visible or palpable masses, depressions or scarring. Hair distribution even. No facial edema noted. No sinus tenderness.

Eyes: PERRLA, clear conjunctiva, white sclera, anicteric, visual fields intact by confrontation, discs flat with sharp margins, vessels present w/o crossing defects, retinal hemorrhages.

Ears: Tympanic membranes clear/ no erythema/ no bulging, good light reflex, Weber midline, Rinne ac better than bc, adequate Whisper test.

Nose: Nares patent bilaterally. Noted red and mildly swollen turbinates' and septum. No septal deviation, no perforation.

Mouth/Throat: Moist and intact buccal mucosa, tonsils present, midline tongue, caries, dentition intact; palate rises symmetrically, gag present; no masses/thyromegaly, carotid pulses present, no bruits, the trachea is midline.

Neck: No masses palpated. Trachea midline, No anterior or posterior lymphadenopathy. Thyroid symmetrical and appropriate in size without nodules.

Respiratory: RR – 13, O2 sat – 98% on room air. No shortness of breath noted. Symmetrical chest expansion. Clear breath sounds bilaterally. Denies a cough with no sputum production. No tactile fremitus.

Breast: Symmetrical breasts, no gynecomastia, no discharge noted.

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Cardiac: HR: 69. S₁, S₂ present, with normal rate and rhythm. No presence of heart murmurs. BP: 111/76. +2 Radial, brachial and pedal pulses.

Extremities are warm and well perfused, no edema. No chest pain and no palpitations

GI: Abdomen soft, non-tender and non-distended without any masses. Bowel sounds present, normal, no liver nodularity or masses, no splenomegaly.

GU/Reproductive (Male): No lesions, inflammation or discharge from the penis; no rectal fissure, hemorrhoids, lesions or fistulas; normal size, non-tender prostate; denies urgency, frequency, intermittent urinary stream; brown BMs with a regular pattern, adequate daily urinary output. No costovertebral angle tenderness noted.

GYN: Deferred.

Musculoskeletal: Positive Tinel sign and Phalen test. Positive paresthesia with numbing and tingling of right thumb, index and middle finger with palmar, dorsal hand and forearm involvement. Thinner muscles at the base of the thumb atrophy. No muscle weakness noted. No pain, swelling or tenderness to joints. Muscular strength and ROM +5 in all other extremities. No spine deformities.

Skin/Integument: No skin rashes or lesions. No cyanosis or clubbing of fingers. No abnormal moles or nevi. Color in accordance with ethnicity, no hyper/hypopigmentation.

Psychiatric: No depression, anxiety or agitation noted. Judgment and insight intact. Intact memory for recent and remote events. Well groomed, eye

contact; cooperative attitude; adequate attention, speech; euthymic mood, goal-directed thought process; good thought process, no presence of hallucination or suicidality

Neuro: Positive Tinel sign and Phalen test. Positive paresthesia with numbing and tingling of right thumb, index and middle finger with palmar and dorsal hand involvement. Cranial nerves II to XII grossly intact; AAOX3; pinprick, light touch/vibration intact; no atrophy, tremors, or clonus; rapid alternative movement intact. Muscle tone and reflexes appear normal. Negative Romberg sign. All deep tendon reflexes 2+.

Hematologic/Lymphatic/Immunologic: Denies lymph node swelling/tenderness/pain, warmth. Denies recent changes in activity level. No petechia noted

Determine Billing Level of Physical Objective Exam (choose one):

Comprehensive Exam (8 organ systems see notes);

Detailed Exam (5-7 see notes);

Expanded Problem Focused Exam (2-4 body area or organ system (6-11 elements);

Problem Focused Exam: 1 body area or organ system (1-5 elements);

Laboratory Data Already Ordered and Available for Review (If not done will go in plan)

- N/A

Diagnostic Procedures/ Data Already Ordered and Available for Review (If not done will go in plan)

- N/A

ASSESSMENT (10 points); GRADE RECEIVED _____

1. Main Diagnosis/Health Problem:

- Carpal Tunnel Syndrome

2. Differential Diagnosis Related to each Main Diagnosis/Health Problem:

- Cervical (C7) radiculopathy
- Cubital Tunnel Syndrome

3. Additional Health Problem/Dx:

- Dyslipidemia (diagnosed in 2018)

PLAN (10 points); GRADE RECEIVED _____

Plan for Carpal Tunnel Syndrome

Additional Laboratory Tests or Diagnostic Data Needed:

- Right-hand radiography
- Nerve conduction test of the right hand
- Electromyography of the right upper extremity

Pharmacologic Management:

- Ibuprofen 800mg PO every 12 hours as needed for pain

CNU CONTINUACARE (CONVIVA)

2600 W. Flagler st. Miami, FL. 33135

Patient Name: A.

R

Date 02/08/2019

Address: 2950 SW 71th ct Miami, FL.

33145

RX:

Ibuprofen 800mg PO Q 12 hours as
needed for pain x 7 days

Disp: # 14 (Fourteen)

Refills: 0

Signature: Yeniell Diaz ARNP

Non-Pharmacologic Management:

- Use of a wrist splint, especially at night to relieve numbness and tingling
- RICE (Rest, Ice, Compression, Elevation)

Health Education:

- Change the position of the computer's keyboard and make necessary ergonomic adjustments to avoid progression of the disease
- Avoid taking prescribed pain medication on an empty stomach to prevent ulcer formation

- Allow breaks from repetitive tasks like typing, using home improvement tools, etc. Try setting a timer during these tasks to wiggle your fingers, stretching your hands, and moving your fingers to improve circulation to these areas.

Follow Up:

- Return to the clinic in 7 days if symptoms have not improved

Referral

- Orthopedic medicine referral for surgical evaluation

Plan for Dyslipidemia

Additional Laboratory Tests or Diagnostic Data needed:

N/A

Pharmacologic Management

- Increase atorvastatin to 20 mg PO once daily at bedtime

Non-pharmacologic Management

- Decrease in intake of saturated fats and cholesterol
- Increase the ingestion of fiber and complex carbohydrates
- Maintain ideal body weight and BMI (19-24kg/m²)

Health Education

- Join an aerobic and resistance exercise program

Follow-up

- Follow up with the primary care physician in three months

Referral

- Nutritionist referral for healthy food plan

CNU CONTINUOCARE (CONVIVA)

2600 W. Flagler st. Miami, FL. 33135

Patient Name: A.

R

Date 02/08/2019

Address: 2950 SW 71th ct Miami, FL.

33145

RX:

Atorvastatin 20mg PO daily at bedtime

x 30 days

Disp: # 30 (Thirty)

Refills: 2

Signature: Yeniell Diaz ARNP

For the Encounter Final Level of Decision Making: (give rationale for level which is based in Hx, physical, Decision making); Choose one

Moderate Complexity: This is an established patient that presents with a new problem (carpal tunnel syndrome) with additional work-up planned, and a chronic problem on a worsening state (dyslipidemia). For this encounter, a physical exam was performed along with a list of diagnostic tests were ordered. The patient represents a moderate risk since he is experiencing an

acute problem, with an exacerbation of a chronic illness. Furthermore, diagnostic tests have been ordered and new medication regimens have been added to the plan (EM University, 2019).

Billing Level:

Patient Status: Established

Level of History: Comprehensive

Level of physical exam: Detailed

Level of Medical decision making: Moderate Complexity

Billing Code: 99214

ANALYSIS of SOAP NOTE (50 POINTS); GRADE RECEIVED _____

Subjective Analysis

Carpal Tunnel Syndrome (CTS) is a type of entrapment neuropathy syndrome characterized by pain due to the compression of the median nerve between the carpal ligament and structures located within the carpal tunnel (Papadakis, McPhee, & Rabow, 2019). For the most part, this is a disease that progresses over time due to the repetitive swelling episodes that end up damaging the median nerve. Some of the multiple etiologies CTS presents with include osteoarthritis, hypothyroidism, trauma, pregnancy, obesity, mass lesions, sarcoidosis, and amyloidosis (LeBlanc & Cestia, 2011).

Neurologic presentations in other distributions about the hand are not generally associated with CTS. Due to the syndrome's complexity, patients rarely present with an exact history of symptoms in the precise median

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nerve distribution, which can be challenging to differentiate the exact distribution of signs and symptoms at the time of presenting their history (Parks, 2018). Subjective data for the diagnosis of CTS include a dull aching discomfort, weakness/clumsiness/numbness of the affected extremity, “needles and pins” pain sensation, swelling of the hand and sporadic color changes. Some of the precipitate factors are sleep, repetitive extremity actions and continued hand positions (Khan, Shenha, Ramesh, Sandhya, & Paul, 2017). As A. R. presents with right-hand numbness, tingling, needles and pins discomfort that gets exacerbated as he does computer work, getting relieved by positional changes; the diagnosis of CTS is presumed.

Although there is no natural cutoff between normal and abnormal lipid levels due to the continuous lipid measurements, a linear relationship exists between lipid levels and cardiovascular disease risk. Dyslipidemia is traditionally classified by patterns of elevations of lipids and lipoproteins. Etiologies have been associated to genetics and acquired factors like environmental and lifestyle (Papadakis, McPhee, & Rabow, 2019).

Objective Analysis

On physical examination, the diagnosis of CTs presents with complaints of paresthesia, the characteristic numbness and tingling sensation on the median nerve distribution (Parks, 2018). Also, some of the physical exam findings can be expected in CTS consist of a positive Tinel’s sign, median nerve compression test, and Phalen’s test.

Ischemic changes in the median nerve of the carpal tunnel develop an unstable axon potential membrane, which could be easily depolarized by

tapping on the nerve. The actual tapping over the palmar surface of the carpal tunnel with its associated tingling and numbness of the median nerve distribution is what it's called a positive Tinel's sign (Parks, 2018). Two other tests can contribute to the diagnosis of CTS. They consist of increasing the pressure in the carpal tunnel in two ways, by firmly pressing onto the transversal carpal ligament or by twisting the tunnel by bending the wrist. These tests are called median nerve compression test and Phalen's test respectively (Parks, 2018).

In more severe cases of CTS, there is another finding that most patients present with, which is atrophy of the thinner muscles at the base of the thumb. This change appears as the prolonged damage of the medial nerve over the years and consequent denervation to the mentioned muscles (Parks, 2018). According to Park (2018), depending on the degree of atrophy, in these chronic stages of the disease chances for treatment and surgical success are relatively poor and the aim is more to slow progression of the disease and prevention neurologic symptoms (Parks, 2018).

In Mr. A. R.'s case several objective findings like paresthesia of the right hand with associated numbness, tingling. As well as positive Tinel's sign, Phalen's test and mild atrophy of the thinner muscles at the base of the thumb bring the necessary data of the appropriate diagnosis of CTS. A. R. presents to the clinic with a cholesterol level of 181 mg/dl which represents a normal value and an LDL of 158 mg/dl which represents an above the normal limit value following the American College of Cardiology (ACC) guidelines (Papadakis, McPhee, & Rabow, 2019).

Assessment Analysis

Although the subjective and objective presentation of A. R. is more consistent with CTS, there are other differential diagnoses like cubital tunnel syndrome and C7 cervical radiculopathy. The clinical presentation of cubital tunnel syndrome is slightly similar to carpal tunnel syndrome. While CTS and cubital tunnel syndrome both cause pain and numbness in the hand and forearm, cubital tunnel syndrome arises when the elbow is bent for a long period of time (Parks, 2018). Furthermore, the pressure exerted over the ulnar nerve at the level of the elbow gives place to the development of symptoms. Some causes for this disorder include leaning on the armrest for a prolonged period of time exerting pressure over such nerve, stretching, and the repeated snapping of the elbow (Parks, 2018). In the case of C7 cervical radiculopathy, the pain is the result of a compressed nerve root by a laterally herniated intervertebral disk, degenerative spondylosis or osteoarthritis (Knoop, Stack, Storrow, & Thruman, 2018). Clinical findings upon presentation include sharp pain that gets worse with cough and frequently radiates over the shoulder down the arm. There is associated numbness and tingling depending on the dermatome involved (Knoop, Stack, Storrow, & Thruman, 2018).

Even though A. R. presented with pain, numbness, and tingling of the hand and forearm, positive Tinel's sign and Phalen's test suggest the involvement of medial nerve compression as opposed to ulnar nerve dysfunction as proof of cubital tunnel syndrome. Furthermore, the lack of sharp pain that radiates down the arm and during palpation of the spinous process of the C7 in the cervical area dissipates the diagnosis of cervical radiculopathy.

Plan Analysis

CTS can be clinically diagnosed after a thorough physical assessment by many practitioners in the office setting (Papadakis, McPhee, & Rabow, 2019). In the case of A. R. diagnostic tests like nerve conduction study (NCS) and electromyography (EMG) would aid in the definitive diagnosis of this condition. An NCS measures the speed of an electrical impulse through a determined nerve consequently identifying nerve damage. During this test, the specific nerve is stimulated by one electrode while another electrode located distally to the origin records the electrical activity as it bypasses the area. This activity is repeated for each nerve tested (John Hopkins Medicine Health Library, 2018). EMG is a test that is used to diagnose neuromuscular abnormalities. This test measures muscle response as a consequence of nerve's stimulation of the muscle. In the case of CTS, this test would examine the degree of the nerve input towards the specific muscle as a very sensitive diagnostic tool for early damage of the median nerve, even when physical symptoms are still not present (John Hopkins Medicine Health Library, 2018).

Pharmacological treatment for A. R. will consist of a nonsteroidal anti-inflammatory drugs (NSAIDs) like ibuprofen 800mg every 12 hours to help relieve the pressure exerted by different structures over the median nerve (Papadakis, McPhee, & Rabow, 2019). Mr. A. R. will be started on an increased dose of atorvastatin (20 mg), which represents an increase of 10mg compared to his previous dose to try to achieve an LDL goal of 100 mg/dl or below. The medication will be taken at night for better metabolism of the active components of the statin. Nonpharmacological methods will

include the use of a wrist splint, especially at night to relieve symptoms like numbness and tingling. Moreover, classical musculoskeletal initiatives like adequate rest, ice, compression, and elevation have proved effective in the symptom relief of this disorder (Papadakis, McPhee, & Rabow, 2019). The patient will be instructed about several tips that contribute to the management and slow progression of this condition like the use of ergonomic devices to help support wrist position at work. Avoiding strenuous periods without changing position could be detrimental to CTS. For this reason, the patient is advised to take several breaks and positional changes using a clock timer as reminders to hand stretching, fingers wiggling and wrist exercises that promote circulation and decompress affected nerves (Papadakis, McPhee, & Rabow, 2019). In the case of dyslipidemia nonpharmacological management and health education, the patient is advised to reduce saturated fats and simple carbohydrates in his diet, as well as enrolling in an exercise program that will contribute to reduce sedentarism. Last but not least, the patient is instructed to take NSAIDs with food in his stomach to prevent the development of gastric ulcers highly associated with this medication class. A. R. is advised to follow up with a specialist in orthopedic medicine for an evaluation of his condition since he presents with a physical finding most consistent with chronic, advanced disease like it is atrophy of the thinner muscles at the end of the thumb (Khan, Shenha, Ramesh, Sandhya, & Paul, 2017). For this reason, surgical evaluation is recommended. On the other hand, the patient is also given a follow-up appointment with his primary doctor if symptoms do not subside or get worse in seven days.

Summary/Conclusion

The subjective and objective finding of Mr. A. R. is more consistent with CTS. The classic symptoms of CTS consist of hand pain with a burning, needles and pins character, associated numbness and tingling that gets worse over repetitive activities like keyboard use and gets relieved by hand stretching, finger movements, and analgesics. Mr. A. R. denied any history of neuromuscular conditions or similar symptoms, his only medical history consists of dyslipidemia for which a plan has been separately elaborated and discussed. Differential diagnoses have been established with diagnostic tests pending completion for definitive diagnosis. A treatment course has been agreed with the patient specifying pharmacological agents, nonpharmacological approaches, and pertinent health education. A referral appointment has been established with a specialist in the area of Orthopedics medicine as well as a follow-up appointment with primary care if the condition worsens or do not improve in seven days.

References

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