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Cancer Rehabilitation

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November 10, 2021

Objectives

- Definition of Cancer Rehabilitation
- History of the field
- Commonly treated impairments
  - How we treat them
  - Case studies

Definition

Cancer Rehabilitation:

Cancer rehabilitation providers focus on improving each patient's functional status. Using an interdisciplinary model of care, professionals identify patients' goals, improve their function, develop a patient and family centered plan of care that accounts for medical, physical, psychological and social components. The aim is helping patients improve their cancer-related symptoms and treatment side effects, while promoting optimal patient function at home, work and in the community.[1]

History of Cancer Rehabilitation

- National Cancer Act 1971: funds became available for development of training, demonstration and research projects in the field of rehabilitation
- Lehmann et al, 1978: prospective, descriptive study.
  - PMR residents evaluated rehabilitative problems of 805 patients from 4 University affiliated hospitals
  - Identified by organ system:
    - 52% have psychological problems
    - 25% have difficulty ambulating
    - 30% have ADL problems
    - 7% have deficits with transfers
    - 7% communication deficits

History of Cancer rehabilitation

- Model of care that developed:
  - Oncology team is formed
    - Medical Oncologist
    - General Surgeon (today, this would be a Surgical Oncologist)
    - Radiation Oncologist
    - Plastic Surgeon
    - Physiatrist
      - Comprehensive rehab team: Psychologist, PT, SLP, OT, Social worker, Rehab RN

History of Cancer Rehabilitation

- Rehab RN/coordinator screened patients for potential rehabilitation problems.
- When identified: patients were referred to PMR for consultation
- 7 months later:
  - 438 randomly selected patients were screened in same manner-
  - Number of rehabilitation visits increased to 137/m from 13.
  - Programming progressed from late 70's through 80's then stalls.

History of Cancer rehabilitation

- Possible causes/contributing factors:
  - Decline in Federal funding
  - Failure to educate oncologists on benefits of rehabilitation
  - Failure to prioritize cancer rehabilitation to patients
  - Failure of PMR programs to prioritize cancer rehabilitation education
  - Shift in interest to outpatient physiatric medicine

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History of Cancer Rehabilitation

Field continues to grow and need for specialization in this field also grows with it.

Cancer rehabilitation training is necessary for therapists who treat cancer patients and gold standard of care is to have a treating Physiatrist.

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History of Cancer Rehabilitation

- Over the years there have been studies on improvement in function with rehabilitation on inpatient basis and outpatient basis for cancer patients.
- MD Anderson has one of the oldest inpatient rehabilitation units in a major cancer center.
- As of 2007-8 Fellowships in Cancer rehabilitation have developed.
- In 2013- 2 existed: MD Anderson, and Memorial Sloane Kettering.

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History of Cancer Rehabilitation

- Today:
  - U of Michigan
  - Georgetown
  - U of Kansas
  - U of Pennsylvania
  - Ohio State
  - Atrium Heath
  - MD Anderson
  - Memorial Sloan Kettering

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Cancer rehabilitation in action

What do we actually do?

This is a TEAM approach

Assess impairments

Determine if additional workup, medication is needed.

Work to ensure therapeutic treatment is specific to the patient's needs and concerns.

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Common Impairments

- Deconditioning/Fatigue
- Neuropathy/Balance
- Lymphedema
- Radiation induced tissue fibrosis
- Dysphagia
- Cognitive impairments ("chemo brain")

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Case: Neuropathy/Balance/Fatigue

55 yo female with adenocarcinoma of the pancreas.
Referred for deconditioning and neuropathy.

Cancer history:
Hospitalized 6 months prior with abdominal pain- mass in head of pancreas identified
Had CA 19.9= 133
CT shows 2.7 x 2.4 cm mass in head of pancreas and periportal LN
Starts FOLFIRINOX.
Course complicated with sepsis x 1 with hospitalization in May.

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Neuropathy/Balance/Fatigue

Functional concerns:
Severe fatigue: 10/10
difficulty climbing up 1 flight of stairs with shortness of breath
Averaging 1100 steps daily
Tingling, numbness and pain in her fingers and toes.

Fall: tripped in the gravel at her brother's house and hit her face.
Tripped on her shoe recently in hospital as well.

Also, on screening: Nausea, loss of appetite, constipation, insomnia

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Neuropathy/Balance/ Fatigue

Functional history: RIGHT Total knee arthroplasty in 2019.
Carpal tunnel in RIGHT hand
RIGHT trigger finger

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Physical Examination:

- Vital signs within normal limits
- NO icterus, no jaundice
- Resp: clear
- Abd: no ascites, distention, tenderness, normoactive bowel sounds
- Trace ankle edema
- Strength: 4/5 hip, otherwise normal
- Gait: Rocks 2-3 times to transition from sit to stand. Ambulates with wide base of support, short step length, slow cadence

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Physical examination

- Sensation: Diminished to pinprick to MCP joint in both hands, to mid foot bilaterally. Vibratory sense absent in feet, present in hands .Proprioception in tact in toes.
- No sensory loss in median nerve distribution.

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Considerations:

Patient will be surgical candidate in the future.

If cardiovascular endurance is poor, postoperative morbidity, and possibly mortality can be higher.

If nutritional status is poor, wound healing with be more difficult. Building muscle mass is more difficult.

She's got 3 more cycles of FOLFIRINOX to go and she's had 2 falls recently.

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Plan:

- 1. Neuropathy: POSITIVE SYMPTOMS:
  - Lidocaine gel 4% prn discomfort.
  - Hand dexterity exercises- finger to thumb, finding objects
  - Desensitization exercises.

2. Balance exercises, proximal strengthening, equipment such as 2WW or rollator walker for community mobility **(PT program)**

*Monitor for focal symptoms consistent with recurrence of CTS or other focal neuropathy.

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Plan:

- Fatigue management:
  - Address: PAIN, SLEEP, MOOD, NUTRITIONAL STATUS, ACTIVITY LEVEL
  - Sleep: sleep hygiene tips/tricks. Trazodone HS
  - Nutrition:
    - Oncology dietician referral
    - Dysgeusia, nausea, constipation: Palliative care referral

Mood: declined depression, wanted to wait on counseling. Continue to monitor.
Pain: neuropathy was uncomfortable and distracting, not painful. No other focal pain

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Plan:

BEST TREATMENT FOR CANCER RELATED FATIGUE?

EXERCISE!
Mustian, et al. 2017. A total of 113 unique studies with 11,525 participants compares pharmaceutical, exercise and psychological treatments for cancer related fatigue.

Exercise is most effective.

Start a walking program with goal of 2 m ambulation in house 6 x daily.
Monitor steps with pedometer- goal of increasing activity by 10% weekly

PT will advance home exercise.

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OUTCOME

- Unfortunately, was hospitalized with acute cholangitis in September 2021 and has been doing home health PT/OT since that time.
- She is undergoing chemoradiation at present with plan for surgical resection after completing this, Likely in Late December 2021 or early January 2022.

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OVERALL OUTCOMES

- Hutchison, et al 2019:
- Evaluation of 102 adults treated in Allina system with Cancer rehabilitation protocol.
- 92% made improvements in function with study of 6 minute walk test and sit to stand
- Subjective improvements in fatigue and in pain scale.
- Those who perform lower initially made more significant gains.
- Average treatment: 10 sessions

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WHAT'S THE DIFFERENCE?

- Cancer trained PT is familiar with:
- Consistent assessment of function, including neuropathy s/sx.
- Pacing of exercise
  - Shorter duration bursts of activity
  - Correct intensity: Periodicization of exercise
  - Focus of home exercise program and fatigue management strategies

Work with medically frail patients more frequently
Commonly treat BOTH loss of endurance and neuropathy/balance.

When to refer for additional assessment or chart review.

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WHAT'S THE DIFFERENCE?

- IN short, a patient treated by a PT without additional training is more likely to have a longer episode of care with less effective results.
- They are also more likely to continue PT when further assessment is needed to facilitate progress or assess patient safety.

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Case Study: Head and Neck Cancer

Cancer Rehabilitation at Allina Health has a Comprehensive head and neck cancer program.

Involves:

1. Early functional assessment and maintenance exercises for neck range of motion and fatigue management- PMR visit
2. Early evaluation with SLP – maintenance swallow exercises during radiotherapy.

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Case Study:

- Patients often also see oncology dietician- through Allina or outside oncologist.
- DURING radiotherapy, they can see SLP to review exercises and ensure they can keep up with these.
- See PMR again after completion of radiotherapy for a functional assessment.

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Case study:

- At that time, we make a treatment plan to improve:

- Swallow function
- Neck or shoulder range of motion
- Trismus
- Swelling in neck/face
- Fatigue/deconditioning
- Xerostomia

This will involve: Lymphedema therapy, manual or musculoskeletal therapy, dysphagia therapy, and debility protocol.

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Case: OHNC

56 yo male with recently diagnosed squamous cell carcinoma of the LEFT tonsil.

Seen initially in June 2021.

History:

- Presented to ENT for left ear and throat pain 5/12/21. Laryngoscopy demonstrated Left tonsillar mass
- CT neck 5/12/21: LEFT level 2-3 lymphadenopathy with 2.6 and 1.6 cm masses, 2.8cm left tonsillar mass narrowing the airway
- PET CT 5/18/21: no distant metastasis
- 5/19/21:US guided FNA left neck node: P16+ squamous cell carcinoma
- Plan is for chemoradiation with IMRT 70 Gy/35 fractions to tonsil, 63 Gy/35 fractions to tonsil with left levels II-III, 56 Gy in 35 fractions to RIGHT levels II-IV, Left IB and IV-V
- Chemotherapy: 3 cycles. High dose cisplatin with 5FU.

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Chief complaint/functional history

Stiffness on left side of his neck- this gets worse with activity. He can also be stiff in the morning until he gets moving.

He has no difficulty with driving, reaching overhead. No associated shoulder pain or loss of range of motion.

He has lost about 10 lbs since diagnosis but is "eating ok" now.
He just had a PEG placed prior to starting chemoradiation.

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Case study

He has local swelling over the left side of his neck associated with lymphadenopathy and LEFT tonsillar mass.

He works full time repairing small engines – is self employed. Has to lift 50 lbs at time at maximum, infrequently for his job.

He estimated that he could walk about a mile but had not done so in a month.

Prior history of RIGHT rotator cuff repair.

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Physical Examination

Vital sign stable.
ENT: mucous membranes moist- thick yellow coat to tongue. Tongue mobility restricted to RIGHT (tethering to LEFT side). Jaw opening 37mm. (early trismus)

Respiratory: CTAB
Cardiovascular: RRR, no MRG

Strength 5/5 in upper and lower limbs.
Shoulder ROM is full bilaterally.

Trendelenberg positive bilaterally, Loses balance with tandem gait repeatedly

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Assessment:

- Mild trismus
- Anticipate some difficulty with forming food bolus in mouth 2/2 tongue restriction
- Already some weight loss, > 5% total weight, <10%.
- Mild deconditioning and cancer related fatigue.

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Plan:

- Home exercise: walking program- 5 minute 5 x daily.
- Neck ROM and shoulder stretches
- SLP – exercises.
- Methocarbamol for neck stiffness – 500mg q6h prn.

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Outcome

- Saw SLP x 2 during treatment.
- Maintained SOME PO intake during radiotherapy.
- Developed some facial lymphedema and mild neck stiffness during treatment.
  - (loss approximately 15 degrees rotation to RIGHT, 10 degrees to LEFT. Extension- loss of 20 degrees ROM).
- Did not maintain a home exercise program for fatigue and 4 months after completion of treatment, fatigue is persistent and he is only back to work 3-4 h daily with limited lifting.

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Plan: Continued

- Biggest focus at next visit with PMR: swallowing.
- Working with SLP 1 x weekly with exercise
- Gradually advancing diet and working with Oncology dietician.
- Continued methocarbamol and daily ROM exercises reinforced- with target for stretching extension rotation and pectoral stretches as focus. (with PMR). Plan to initiate manual therapy to address further in the future.
- Focus on gradually increasing walking program 10% weekly

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Radiation Induced tissue fibrosis

Seen frequently with OHNC and Breast cancer patients.
Patients receiving pelvic radiation- colorectal, bladder, gynecologic malignancies.

Dose and duration dependent.

Often main culprit in reduced range of motion, musculoskeletal pain after treatment.

There are acute and long term effects. Previously irradiated tissue is never exactly the same after radiotherapy.

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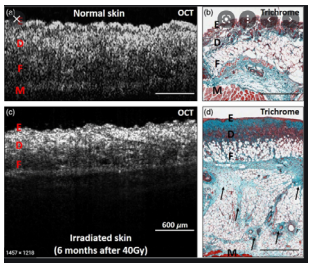
Radiation Induced Tissue Fibrosis

Top images- skin prior to radiotherapy

Bottom images- skin 6 months after 40Gy

Skin is thinner, denser. There is effacement of sebaceous glands, and hair follicles. Tissue exhibits decreased vascularity



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Radiation Induced Tissue Fibrosis

In head and neck cancers:

- Structures of swallowing are less mobile and flexible.
- Muscles of anterior neck that depress the epiglottis when swallowing are weaker and less efficient.
- The epiglottis often does not invert
- Jaw opening can be diminished due to musculoskeletal fibrosis
- Tongue mobility can be diminished
- If the person also had a surgery, they have much higher likelihood of severe fibrosis.
- Lymphedema is related to decreased lymphatic flow across the previously irradiated tissue.
- Neck range of motion is limited due to tissue changes

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WHAT'S THE DIFFERENCE?

If the treating Speech therapist is not familiar with the pathophysiology of radiation induced dysphagia, they will NOT be able to treat the patient as effectively.

Result: Prolonged treatment, limited effectiveness.

If treating physical or occupational therapist is not familiar with radiotherapy, they will not have as effective approach to mobilizing tight tissue.

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WHAT'S THE DIFFERENCE?

Lymphedema: In setting of head and neck cancers- it's about a focal area where fluid can't move well, less about lymph node removal.

There are specific ways to measure volume and work with fibrosis when treating cancer related lymphedema in this setting.

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Arm/Leg cancer related lymphedema

Primary mechanism of injury is removal of lymph nodes.
More nodes removed, higher likelihood of developing lymphedema.

In this setting, it's about focal removal of nodes in an area that helps remove fluid from the associated ARM as well as the breast, LEG as well as groin.

With arm and leg swelling tissue tends to get progressively more swollen if not treated early.

In most cases, lymphedema is a permanent condition

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Lymphedema treatment

Within the Allina system, patients who show signs of lymphedema should establish care with PMR AND see a lymphedema therapist.

Main components of treatment:

- Manual lymph drainage massage
- Exercise
- Compression

- MLD and exercise facilitate movement of interstitial fluid, or lymph.
- Compression keeps fluid from building back up again.
- Patient will require chronic management.
- Work up of severity of lymphedema is often indicated.

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Lymphedema treatment

- Patient will need compression garments. If worn daily, these need replacement in 3-4 months.
- They will need a yearly prescription for garments and chronic follow up to ensure condition is well maintained.

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Lymphedema treatment

Not all garments are alike:

1. Day garments: Flat knit, circular knit, Velcro, custom or off the shelf
2. Night garments- custom

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Chemo Brain

- Chemotherapy induced cognitive deficits:
- A constellation of symptoms reflecting cognitive decline, either reversible or irreversible, that a subset of adult, non-CNS cancer patients experience as a direct effect of chemotherapy. These effects persist even after controlling for factors such as treatment regimen, emotional status, and cancer burden.
- Often patients report persistent fogginess, decline in multitasking, executive function, word finding difficulty.
- **Cognitive therapy can help**
- **Exercise helps**

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Summary

- Cancer rehabilitation is a discipline that can help improve quality of life and function in all phases of treatment
- Work with each individual patient to establish treatment goals and priorities
- Team approach: PMR, RN Navigator, PT, OT, SLP. Psychology or Neuropsychology
- Holistic approach

Common reasons for referral: Lymphedema, radiation fibrosis (musculoskeletal impairment), Neuropathy, Fatigue/Deconditioning, Cognitive dysfunction, Dysphagia.

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- Consult Cancer Rehabilitation MD: 208839
- Consult Cancer Rehabilitation Therapies: 208840
- Scheduling line:621 863 2123

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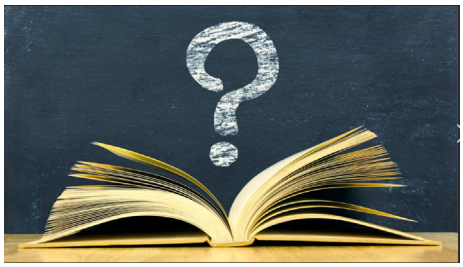
QUESTIONS



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