Aging with late effects of polio

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I thank my colleague Dr Anupam Data Gupta who has kindly agreed to give this presentation on my behalf

Common Neuromusculoskeletal Conditions Related to Aging

Osteoarthritis

Sarcopenia: loss of muscle mass, strength & function

Osteoporosis: loss of bone calcium & other minerals

Increased fracture risk

Degenerative spine (scoliosis/ kyphosis)

Decreased sensation: peripheral neuropathy, hearing loss

Increased Incidence with Age:

Diabetes, thyroid disease

Hypertension, heart disease, arrhythmias, peripheral vascular disease

Anemia, loss of immune function

Parkinson's disease

Kidney disease

Deconditioning

Depression, anxiety, insomnia

Main features of Post-Polio Syndrome (PPS)

Excessive fatigue (>80%)

Muscle/joint pain (60-80%)

New weakness/atrophy (40-50%)

Cold intolerance (25%)

Swallowing/ breathing changes (10-20%)

Diagnostic criteria for post-polio syndrome

1. Prior paralytic poliomyelitis with evidence of motor neuron loss, as confirmed by history of the acute paralytic illness, signs of residual weakness, and atrophy of muscles on neurological examination, and signs of denervation on electromyography (EMG).
2. A period of partial or complete functional recovery after acute paralytic poliomyelitis, followed by an interval (usually 15 years of more) of stable neurologic function.
3. Gradual or sudden onset of progressive and persistent muscle weakness or abnormal muscle fatigability (decreased endurance), with or without generalized fatigue, muscle atrophy, or muscle and joint pain.
4. Symptoms persist for at least 1 year
5. Exclusion of other neurologic, medical, and orthopaedic problems as causes of symptoms.

Published by March of Dimes in 2001

Aging with Post-Polio Syndrome (PPS)

Symptoms associated with PPS may increase due to aging and associated medical conditions

Many of the neuromusculoskeletal changes related to aging may be accelerated by PPS

Management of PPS and Aging

Complete medical assessment essential

Diagnosis and treatment of associated medical, neurological or musculoskeletal conditions

Optimize body mechanics/ protect weak or painful joints with assistive devices and bracing

Management of specific symptoms

Judicious use of medications

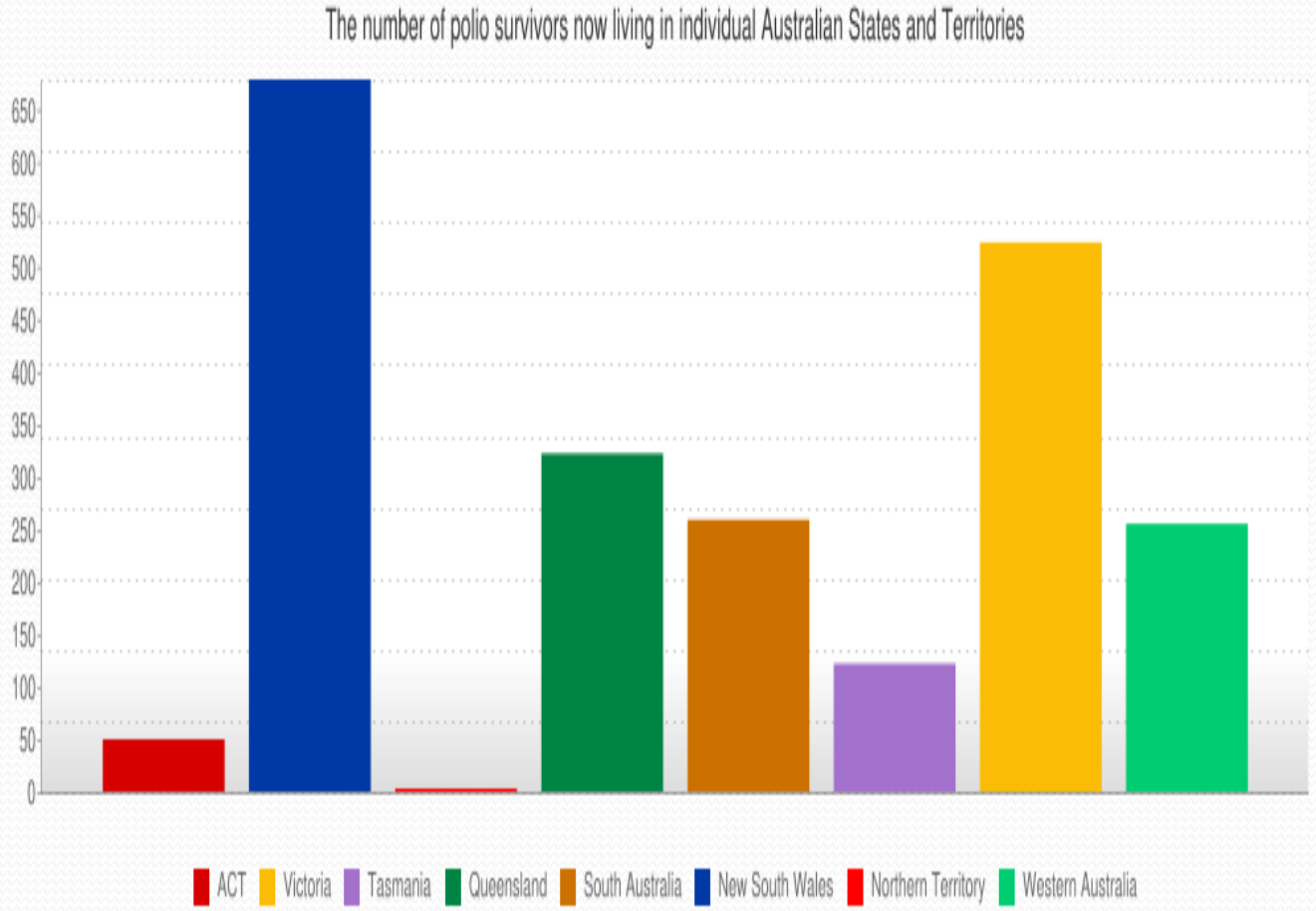
Rehabilitation Physician's role in management of the aging polio survivor

Rehabilitation Physicians are trained to treat people with disabilities secondary to illness/injury and reduce or prevent further functional decline

They usually work in a multi-disciplinary team with allied health professionals such as PT, OT, Orthotists, SP etc.

They can help delineate and treat secondary medical conditions contributing to PPS in the aging polio survivors

They may play a key role in liaising with other medical professionals and provide them with an understanding of late effects of polio in the aging polio survivor



- Data obtained from Australian polio registry

Post-Polio clinics in Australia

A small number of clinics (both public and private) in Australia which cater for polio survivors, providing services to enhance their health, mobility and quality of life.

1. Mt Wilga Late effects of polio clinic – NSW
2. Advanced Rehab Centre- NSW
3. Polio Services Victoria
4. Polio Clinic – WA
5. South Australia ???

The Queen Elizabeth Hospital initiative

Develop a medical supervised healthy aging clinic for polio survivors

1. Medical consultations provided at the QEH by Rehabilitation Physicians
2. Allied health support from private sector (Griffith Rehabilitation and Memorial hospitals) and public sector-QEH Day Rehab Service
3. Orthotic support from QEH, Prostek & OPSA

I thank my colleague Dr Kandiah Umapathysivam who has kindly agreed to give the second half of my presentation

Sarcopenia in polio survivors
A Queen Elizabeth Hospital & University of Adelaide Research project

Dr Kandiah Umapathy Sivam
Senior Research Officer
University of Adelaide

Sarcopenia In Polio Survivors- A Longitudinal Study

Research hypothesis:

Could sarcopenia (loss of muscle mass, strength &function) in aging polio survivors in part account for their increased fatigue and decline in physical performance compared to healthy aging individuals?

Muscle mass

Anthropometric measurements

Mid-upper arm circumference
Wrist circumference
Waist circumference
Hip Circumference
Waist-hip ratio
Calf circumference
Thigh circumference
Weight , height and BMI

Muscle mass

Body Composition Analysis (BIA)-In Body 570

InBody [InBody570]

SEE WHAT YOU'RE MADE OF

ID	Height	Age	Gender	Test Date / Time
Jane Doe	5ft.01.8in.	51	Female	05.04.2012 09:46

Body Composition Analysis

	Values	Total Body Water	Lean Body Mass	Weight
Intracellular Water (lbs)	36.6	60.6	82.2	130.3
Extracellular Water (lbs)	24.0			
Dry Lean Mass (lbs)	21.6			
Body Fat Mass (lbs)	48.1			

Muscle-Fat Analysis

Weight (lbs)	130.3
SMM (lbs)	43.2
Body Fat Mass (lbs)	48.1

Obesity Analysis

BMI (kg/m²)	24.0
PBF (%)	36.9

Segmental Lean Analysis (Based on ideal weight / Based on current weight)

Right Arm	(lbs)	4.43
	(%)	102.0
Left Arm	(lbs)	4.26
	(%)	97.7
Trunk	(lbs)	39.0
	(%)	99.3
Right Leg	(lbs)	11.49
	(%)	83.7
Left Leg	(lbs)	11.29
	(%)	82.3

ECW/TBW Analysis

ECW/TBW	0.396

Body Composition History

Weight (lbs)	143.9	139.9	137.6	136.2	137.3	134.3	133.4	130.3
SMM (lbs)	44.3	44.1	43.4	43.4	43.6	43.4	43.6	43.2
PBF (%)	41.3	40.7	39.2	39.0	39.4	38.6	37.8	36.9
ECW/TBW	0.399	0.398	0.396	0.396	0.397	0.396	0.398	0.396
	10.10.11 09:15	10.30.11 09:40	11.02.11 09:35	12.15.11 11:01	01.12.12 08:33	02.10.12 15:50	03.15.12 08:35	05.04.12 09:46

Recent / Total

Body Fat - Lean Body Mass Control

Body Fat Mass	-	21.8 lbs
Lean Body Mass	+	5.5 lbs

(+) means to gain fat/lean (-) means to lose fat/lean

Segmental Fat Analysis

Right Arm	(3.5 lbs)	179.0%
Left Arm	(3.5 lbs)	184.1%
Trunk	(25.8 lbs)	239.9%
Right Leg	(6.4 lbs)	132.5%
Left Leg	(6.4 lbs)	131.5%

Basal Metabolic Rate

1175 kcal

Visceral Fat Level

Level 12 (Low 10 High)

Results Interpretation

Obesity Analysis
BMI is an index used to determine obesity by using height and weight. PBF is the percentage of body fat compared to body weight.

Segmental Lean Analysis
Evaluates whether the muscles are adequately developed in the body. In each segment, the top bar shows the comparison of muscle mass to ideal weight and the bottom bar shows that of the current weight.

Body Water Analysis
ECW/TBW is the ratio of Extracellular Water to Total Body Water, which is an important indicator whether the body water is balanced.

Visceral Fat Level
Visceral Fat Level is an indicator based on the estimated amount of fat surrounding internal organs in the abdomen. Maintain a Visceral Fat Level under 10 to stay healthy.

Results Interpretation QR Code
Scan the QR Code to see results interpretation in more detail.

Impedance

		RA	LA	TR	RL	LL
Z(Ω)	5kHz	373.1	385.4	25.7	303.0	314.1
	50kHz	337.2	352.5	23.0	282.3	289.8
	500kHz	297.4	311.5	19.1	258.1	267.8

Muscle Strength and Function

Gait speed

Hand Grip strength

Activity of daily living (ADL)

Accelerometer – ActivPAL

This thigh-worn device uses accelerometer-derived information about thigh position to determine the start and end of each period spent sitting/lying, standing, and stepping, as well as stepping speed, step counts, and postural transitions.

Benefits of a longitudinal study of polio survivors

Measurement of muscle mass, strength and function on an annual basis may provide an objective way to record functional decline with ageing.

Initiation of specifically tailored exercise and nutritional interventions for polio survivors to reduce the progression of sarcopenia and its deleterious effects.

Provide psychological support for polio survivors and an opportunity to communicated with their treating health professionals.

Provides an opportunity to understand their changing state and hence assist existing elderly polio survivors and younger immigrants who have suffered polio to age healthily.

Acknowledgements

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Mr. Paul Cavendish from Polio Australia

Volunteers from Polio SA who have participated in the research study so far

Additional information

QEH- Rehabilitation Medicine Clinic

Referral letter from GP required and addressed to Dr Nigel Quadros, Department of Rehabilitation medicine QEH

Fax: 82228593 (email: nigel.quadros@sa.gov.au)

Participation in Sarcopenia-polio study

Contact Dr Kandiah Umapathy Sivam (called Sivam) on

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