

AGING IN PRADER-WILLI SYNDROME

Medical conditions and diseases to be treated
to avoid too early aging

Susanne Blichfeldt MD
Berlin 2024

My wish and goal for this presentation

- To tell that early physical aging is not a rule for all with PWS
- To give information about medical facts and possible treatments (PWS.)
- To give information about how healthy adults with PWS can be
- How important awareness of the possible treatable symptoms is

What we know to day about PWS

- More and more adults are living healthy , happy with normal weight
- It is possible to have a long ,happy and healthy life with PWS

Special support is always needed, together with realistic expectations

- Family, caregivers and health professionals must know PWS:
- And know about diseases in PWS and react when specific help is needed.



And when you are old: PWS and all others

- Looking older
Less muscle power.
Balance can be weak. More weak than before (PWS)
- More risks for diseases.
- Need for help can change, when you are not able to do as before
- Mentally : you are in many aspects the same... and have more experience
- But it can be difficult to manage the changes that come with age



What we also know

- PWS is a very complex disease.
- Many physical problems and symptoms typical for PWS can arise.
- To day we know how to treat many of the well known medical problems in PWS
- It happens that the medical problems are not seen, and then not treated, which can cause early aging or even early death
- A recent Dutch investigation showed that among 115 adults 61% had one or more untreated health problems, and 25 % had multiple untreated health problems

The 115 adults with PWS (Netherland)

- Seventy patients (61%) had undiagnosed health problems
- 1 in every 4 patients had multiple undiagnosed health problems simultaneously.
- All males and 93% of females had hypogonadism
- 74% had scoliosis, 18% had hypertension,
- 19% had hypercholesterolemia,
- 17% had type 2 diabetes mellitus,
- 17% had hypothyroidism.
- Unfavorable lifestyles were common: 22% exercised too little
- 37% did not see a dietitian

Diseases in PWS

- Symptoms can be different in PWS compared to others
- The symptoms seen can be different than expected with diseases
- Ex:
 - Less pain with fractures, and abdominal diseases, no fever with infections
- People with PWS can not always explain their symptoms when if they are ill
- so diseases can be overlooked
- Means : a risk that diseases are diagnosed late, or even too late



What is sometimes wrongly expected

- Adults with PWS cannot survive healthy until “old age”
- Early death is to be expected, as it is for many congenital syndromes
- People with intellectual disabilities like PWS will develop dementia
- Why:
 - We do not have any published data on healthy aging in PWS
 - No systematic information about the medical conditions of those who died

Causes of death most often referred in adults with PWS

- Overweight
- Respiratory problems: lung infections not treated, apnea
- Abdominal diseases: infections and stomach rupture
- Accidents: also in traffic
- Choking. Breathing is blocked by food in the throat.
- Sudden unexpected death , and often no reason found and described



More research is needed

- The body and the brain in PWS:
- Is aging different ? , also when correct medical treatment is given ?
- Persons with PWS are different individuals. And their social conditions and support varies a lot. This makes it difficult to do research
- So now we must rely on:
 - the knowledge we have about symptoms we see, and give correct treatment
 - and avoid early aging because of overlooked medical condition

So what to be aware of: Weight....

- Weight : Overweight can result in diseases in PWS:
-
- 1. Diabetes that causes:
 - circulation problems, edema, heart, kidney , eye diseases
- 2. Joint problems, difficult to walk
- 3. Breathing (lung) problems, low oxygen, poor general condition
- 5. Sleep problems with apnea, daytime sleeping
- 6. Bladder control and intestinal problems, obstipation
- 7. Infections, cancer

And how to treat overweight in PWS

- Gradual weight loss based on “correct food” and moving
- Supported by a dietician who knows (or can learn) about PWS.
- To secure a correct diet plan : protein, carb, fat, vitamin D.
- And having a plan for structure of administration of food
- Daily program for moving:
 - walking is possible for all.
 - other activities that demands physical activity, plays etc

Hormonal diseases caused by hypothalamic dysfunction PWS

- Growth hormone deficiency (many adults need treatment ?)
- Hypogonadism (all men, most women)
- Hypothyreodism (15%-20%)
- Adrenal insufficiency (rare)

Growth hormone (GH) deficiency in PWS

- Many young adults have been treated with growth hormone during childhood some have stopped at age 18 some are still treated.
- GH is important for muscles and organs, also for adults. Does not affect appetite.
- There are different rules about GH treatment for adults in countries
- In some countries some special tests are needed before start
- We know that adults (not PWS) with GH deficiency, can have medical problems and earlier aging and earlier death if untreated is seen.
- GH is given as daily injections, and the dose is adjusted after regular blood tests

Hypogonadism (low testosterone) in men

- Small genitals since birth and no normal maturation of genitals in puberty:
- Insufficient testosterone in blood (produced in the testicles): results in:
- No growth spurt in puberty
- No normal muscle growth in puberty, smaller than normal muscles in adults
- High pitched voice as adults
- Small genitals as adults, little body hair
- Looks young in the first adult years, but early aging, looks old, seen around age 30
- Osteoporosis will arise , risk of fractures
- Anemia can arise

Early aging and weak muscles are seen in men with low testosterone (hypogonadism)

Testosterone treatment in PWS

- In puberty or later: blood tests will show if treatment is needed
- An individual assessment if treatment is to be given
- Can be given as daily gel(cream) on the skin
- Or as injections every 3 months
- Recommendation: start with low dose and follow with blood tests
- Testosterone deficiency in men was seen in all of the Dutch cases, many were not treated, and in 50% it was not diagnosed before

Hypogonadism in women, low estrogen

- Lack of female hormones (estrogen and progesterone) result in:
- No growth spurt in puberty.
- Not normal breast development.
- No or late or irregular menstruation periods.
- Early aging,
- Early osteoporosis

- Caution: a few women will have menstruations, often late and irregular and few (if no treatment is given)
- all women (PWS) are in theory at risk of becoming pregnant.

Treatment of women with hypogonadism

- Blood tests can be done to evaluate the degree of hypogonadism
- Estrogen supplement must be considered in women with no / few menstruations
- An individual assessment if medical treatment is needed,
- Evaluate possible side effects .
- Hormone treatment can be given as P pills
- Important to know and tell the possible risk of pregnancy
-
- Gynecologist contact is to be recommended for all women with PWS

Hypothyroidism

- Hypothyroidism is seen in around 15% of persons with PWS.
- The hormone is normally produced in thyroid gland.
- Hypothyroidism can arise in childhood or later
- Hypothyroidism can result in
- Less muscle power.
- Loosing weight (muscles)
- Feeling cold
- Slow heart rate
- Being slow, no energy,
- Early aging, physically and mentally

Hypothyroidism diagnoses and treatment

- Regular blood tests for hypothyroidism , measuring hormones in blood
- Blood test will show if hormone treatment is needed.
- Treatment is easy:
 - a daily tablet, taken ½ hour before breakfast
- Regular blood test is needed to regulate the tablet doses

ADRENAL INSUFFICIENCY

- Adrenal insufficiency in PWS seems to be rare.
- Adrenal hormones are important for the body to react normally when we are ill, having severe infections
- Is recommended to measure adrenal hormone cortisol, with blood tests in acute situations with severe physical illness, to know if supplement is needed.

Autonomic dysfunction

- Our inner nervous system. We cannot control-
- Works by itself: Sympatic and parasympatic nerve system.
- Stimulates and regulates.:
- Bowel and urinary system
- Blood pressure
- Sweat, blood circulation in organs and skin
- Sleep
- Temperature with diseases: fever or not
- Nervous Vagus is important for the autonomic nerve system

More Symptoms to be aware of in PWS

IMPORTANT for all ages also when aging

Chewing and swallowing and teeth








- Mouth pharynx and upper esophagus: muscles are weak:
- Some are not chewing the food sufficiently: risk of choking

- Food is often not swallowed normally: Saliva is sticky
- After a meal some has food in mouth, pharynx and upper esophagus
- Big pieces: risk of choking
- Advice: drink $\frac{1}{2}$ glass of water when the meal is finished:
- Teeth: gastro-intestinal reflux is common in PWS: Teeth can be acid-destroyed

Constipation

- One of the most common problems in adults with PWS
- Because of slow intestinal passage, which is the case for many adults, the result can be severe constipation, sometimes so extreme, so it causes vomiting.
- The cause is slow movement of muscles in the intestines.
- Laxantia can help, and the dietician can prescribe the best diet.
- Constipation can affect mood, alertness and general wellbeing

Bristol Stool Chart

Type 1		Separate hard lumps, like nuts (hard to pass)
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on the surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces. Entirely Liquid

Sleep and sleep apnea

- Sleep investigations have shown that sleep pattern can differ from normal (the different sleep phases, deep sleep and dream phases)
- Sleep apnea (breath holding during sleep) can be central or obstructive:
- Central sleep apnea: abnormal regulation from the brain
- Obstructive sleep apnea: caused by enlarged tonsils or adenoids.
- If snoring or sleep apnea is noted : sleep investigation is recommended and
- Evaluation by an ear-nose-throat doctor
- Some will need CPAP treatment.
- Narcolepsy and kataplexia: are rare (sudden sleep attacks)

Edema and skin infections in PWS

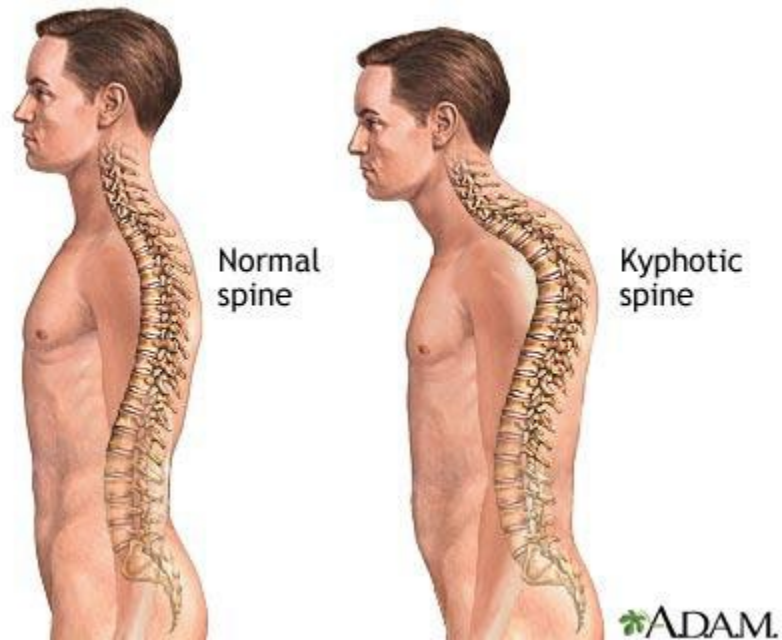
- Leg edema is often seen, also with normal weight:
 - Caused by insufficient lymph drainage, poor circulation:
 - Treatment: supporting stockings, walking, avoid long hours of sitting
 - Diuretics are only indicated for leg edema caused by heart or lung problems
 - Risk of skin infection with swollen legs, and potentially life threatening
-
- With severe overweight edema can be seen in the whole body and lungs
 - Diuretics given if the heart and lung problems
 - Treatment: weight loss and walking, moving

Not to forget the back and the muscles

- Many with PWS have scoliosis and /or kyphoses.
- Children are often treated with bracing or operation in teenage years.
- Many of the adults to day are not treated as children and can have back problems that causes, with age, more and more stiffnes and pain:
- Treatment:
- contact to physiotherapist that prescribe excercises to done daily at home, superwised byt staff !

Kyphoses und Scoliose

- Kyphoses



- Scolioses



Psychiatric diseases

- Can arise in all
- Can arise in all ages

- Be aware of changes in mood and behavior
- Depression can be seen: symptoms: loss of energy
- Dementia: symptoms : loss of skills..... Important difference to depression
- Psychoses can arise
- Psychiatric diseases can be treated with success, must be diagnosed
- Medication must be started with low dose, to avoid side effects

What to do:

Yearly medical visits and blood tests

- Secure regular medical evaluation and treatment when needed.
- Yearly evaluation of the diet, must be individualized
- Blood tests yearly for:
 - Blood sugar level (diabetes?)
 - Hormones : testosterone(men) estrogen (women), thyroids (both)
 - Vitamin D, calcium
- Other investigations
 - Sleep studies
 - Growth hormone needed?
 - DEXA scan if obese in some cases

And not to forget

- Dentist every $\frac{1}{2}$ year, or more often if needed
- Vision:
 - need of glasses , test every 2-3 year after age 40
- Hearing:
 - test hearing after age 40 and then every 2-3 year, especially if there is a family history of hearing problems

Be prepared:

- Have the one page with you, in all languages:

[Important Medical Facts about Prader-Willi Syndrome - IPWSO](#)

- Insist for medical evaluation :
- When no wish to eat, vomiting
- Being ill, is behaving differently.
- Swollen bones, bleeding : fractures: X ray ?

Always remember

- Write a yearly report: print photos
- What has happened during the year.
- How was the physical and mental function
- Family contact ?
- Any loss of skills, any diseases
- What did you enjoy ? What do you want to do ?





