Lupus in Teenagers-
A webinar for patients and their families

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Understanding Lupus
SLE is due to a “confused” immune system

• Normally our immune system HELPS us
• It is made of microscopic cells that normally work as soldiers, protecting us from infections, or helping us heal well when we have a cut
• It helps us recognize **SELF** (my body), and **NON-SELF** (not my body, like a infection or a splinter)
• Lupus is an **AUTOIMMUNE** disease in which the immune system is very active and confused
AUTOimmunity is when our immune system is unbalanced

• The immune system may lose its balance between normal immunity and autoimmunity ("sees" your body as different and ATTACKS)

• Autoimmunity is an abnormal and exaggerated response against SELF, one's own organs
  - This results in inflammation
  - Inflammation of the joint is called arthritis

• Lupus patients need medication that decreases inflammation, by SUPPRESSING the immune system
Lupus is a lifelong systemic disease which can affect any organ

• Although there are other types of lupus (e.g. neonatal lupus, drug-induced lupus, cutaneous/discoid) most children have SYSTEMIC Lupus Erythematosus (SLE)

• Lifelong illness, characterized by periods of disease flare and remission

• Most patients are on chronic medications and require frequent doctors visits and lab tests
Who develops Lupus?

- >1 million Lupus patients in U.S.

- >300,000 SYSTEMIC Lupus Erythematosus
  - 140 childhood onset lupus at medical center in NYC
  - Many more patients may go undiagnosed

- All ethnic groups susceptible
  - More frequent/severe in Blacks, Hispanics, Asian-Americans, and Native Americans

- More common in females
  - 9:1 in adults, but 4:1 in childhood

- 15% of Lupus presents in the 1st two decades of life
What causes Lupus?

Genes

Hormones

Environment

Infection

Abnormal Immune System

Symptoms of LUPUS
The cause of Lupus is unknown

- In only 2% of fraternal twins do BOTH twins have lupus, and with identical twins it is a 50% likelihood (NOT 100%)

- Predominance in women in reproductive years (9:1 adults, 4-5:1 in children, 2:1 menopausal) but unclear role of estrogen

- Stress and viral infections can result in lupus flare

- The sun (and likely other environmental factors) can result in skin rash and flare of other organ involvement
Lupus can affect any organ
1997 ACR SLE Criteria

- Malar Rash
- Discoid Rash
- Photosensitivity
- Oral/nasal ulcers
- Non-erosive arthritis
- Pleuritis/pericarditis
- Glomerulonephritis
- CNS Lupus
- Cytopenia
- Positive ANA
- Other Lupus serology (Sm, ds-DNA, aCL, LAC, false positive RPR)

1997 criteria not validated in children
Popular symptoms that did not make the cut for “criteria”

- Constitutional features with fever, poor appetite, fatigue and weight loss are seen in up to 75%
- Hair loss is seen in 7-30%
- Raynaud’s phenomenon 16%
Malar Rash

- Skin rashes occur in 75% of patients

- Almost 70% of patients may report a malar rash (butterfly rash over the cheeks)

- This may be PHOTOSENSITIVE, and be triggered by sun exposure

- Heals without scarring
Look “UP” for painless mouth or nose ulcers

- Typically painless
  - Patient won’t notice
  - Sometimes just redness

- Hard palate (roof of mouth) location

- 66% mouth ulcers

- 10% nose ulcers

- Nose ulcer may cause erosion
  - Less common in C-SLE
Discoid rash (Up to 19%)

• Red, raised coin shaped lesions

• Photosensitive

• Also seen in neonatal lupus

• Uncommon to see only discoid (more common to have SYSTEMIC Lupus)

• Common scarring in non-neonatal discoid rash
Photosensitivity is not just “skin deep”

- Up to $\frac{1}{4}$ lupus patients flare from sun exposure

- **ENVIRONMENTAL FACTOR**

- May result in flare of internal organs, such as the kidneys

- Sun avoidance and barriers (sun block, hats, long sleeves)
\(\frac{3}{4}\) of Lupus patients have arthritis

- Arthritis is something that you can SEE and FEEL
  - Swelling, warmth, pain, stiffness of the joint (knee, wrist, finger)
- It is often very painful
- Many times a patient can have normal blood tests and STILL have arthritis
- X-rays are NOT very reliable at taking a picture of the joints
Lupus can affect the lungs and heart

- Symptoms may be cough, chest pain, difficulty breathing especially when taking a deep breath or lying down
- Fluid in the lungs (Pleuritis) can be seen in up to 60% of patients
- Fluid can also develop around the heart (Pericarditis) in up to 30% of patients
- Other problems that may occur include
  - Pneumonia
  - Blood clots to the lung (pulmonary embolism) or heart (myocardial infarction)
  - Bleeding
Lupus commonly causes low blood counts

- Anemia (low hemoglobin) is seen in over 50% of patients, with 5% of patients developing a rare hemolytic anemia
  - Symptoms may include tiredness, irritability and others

- Low white blood cells (leukopenia or lymphopenia) are seen in more than 40% of patients
  - Such patients are at increased risk of infection

- Low platelets are seen in 30% of patients
  - There is a risk of bleeding when platelets are very low
The Notorious ANA!

• Antinuclear antibody (ANA) positive in “all” childhood-onset SLE patients
  - Up to 10% of adults may be ANA negative

• Should be significantly elevated >1:80

• ANA is a sensitive test but not very specific

• 5-10% of children without SLE have a positive ANA
Other blood tests seen in Lupus

- Anti-“xyz” are autoantibodies in the autoimmune disease of lupus
- Anti double stranded-DNA (anti-DNA) antibody often increases during lupus flare
- Anti-Ro (SSA) or Anti-La (SSB) antibodies are seen in systemic lupus, sjogren’s disease and neonatal lupus
- Antiphospholipid syndrome tests may be associated with blood clots and recurrent miscarriage (anticardiolipin, Lupus anticoagulant, beta 2 glycoprotein)
- Anti-Smith antibodies
- Complement (C3, C4) often decreases during a lupus flare
Up to 85% may have Kidney disease

• 90% renal disease within 1st 2 years of disease
• It is one of the main complications of lupus, and some patients may still need hemodialysis and/or kidney transplant
• Although one may have high blood pressure with protein and blood in the urine, the urine may look normal and patients often report NO symptoms, though swelling may be seen
• There are six types of lupus with Class 3, 4, and 5 being the most serious and requiring chemotherapy
• Class 6 is a scarred kidney which is unlikely to improve with medication
Lupus can affect the brain in at least 40% of patients

- Seizures are seen in almost 50%
- Psychosis (delusions or hallucinations) in 12%
- Other problems may include depression, memory loss, nerve disease, myasthenia gravis, meningitis, severe headache and others
- Up to 80% present with problems within the 1st year of diagnosis
- Lupus may affect the brain, although the blood tests, brain imaging and spinal tap are often normal
- Lupus that affects the brain often requires chemotherapy
Antiphospholipid Syndrome

• “Autoimmune” disorder characterized by persistent antiphospholipid antibodies (e.g. anticardiolipin IgM/G, anti-β2 Glycoprotein or Lupus anticoagulant assay)

• Blood clots or pregnancy loss

• Seen in up to 40% SLE

• Treatment is life long anticoagulation (Coumadin or heparin), as it is unresponsive to chemotherapy
Neonatal Lupus doesn’t become SLE

- Discoid Rash
- Low platelets
- Anti-Ro/La antibodies (1-2% risk heart block)
- Liver inflammation
- Heart block
- Healthy liver
- Inflammation of the liver
Children are not little adults

- For unclear reasons children appear to have more kidney and brain involvement than adults, requiring more medications

- BUT, children are more resilient than adults

- Higher overall lifetime burden of disease is unknown

- Long-term effects of possible lifetime medication is not clear

- Effects on growth/psychosocial development

- New recognized complications-accelerated atherosclerosis (16% asymptomatic children)

Life and Medicine involve BALANCE

- Weighing risks vs. benefits of medicine and under-treated Lupus
- Treatment is tailored to the severity of the disease and should be discussed
  - E.g. A patient sick in the hospital for kidney failure may receive different medications than a patient with mild rash
- Not all patients receive the same medications
- Trust your doctor
- Ask questions
Goals of therapy

• Diagnose patients earlier and identify high risk patients

• Treat appropriately aggressively

• Prevent damage from lupus and its treatment
  - Manage/prevent infection
Intensive chemotherapy is often required

- Intensity of medication depends on severity of organ involvement, especially kidney disease
  - Only FDA-approved Plaquenil, ASA and prednisone for 50 years until recent BENLYSTA® (belimumab)

- Most patients receive high-dose steroids

- Most patients receive plaquenil

- Common NON-SPECIFIC chemotherapy therapy with significant toxicity including infertility and cancer

- Newer target-specific agents which are potentially equally/more effective with less toxicity
How do patients do as adults?

• 5yr survival approaches 100%, 10yr survival of 85-90%
• Patients who are living longer may have other problems
  - Infection, medication toxicity (including infertility), osteoporosis, earlier atherosclerosis
  - Growth failure in 16% of children with SLE

• Significant disability may be seen in 30%

• 1/3 felt Lupus interfered with education
  - 55% enrolled/completed college

• Poverty
  - Over 70% live in household with total annual income of <$30,000

Why is C-SLE more severe?

• Is SLE with childhood onset a “different” disease?

• Decreased awareness of Lupus in childhood, results in delay in diagnosis and treatment
  – May lead to delay in detecting mild disease

• Fear of treating “too aggressively” in children

• Overt or “covert” adolescent noncompliance/nonadherence
Adherence/Compliance

• Poorest in adolescence-50% in chronic medical conditions

• Medical-legal obligation of pediatrician to ensure that the child is in a safe, nurturing MEDICAL HOME

• Direct consequence
  - Increased flares, more/longer drug exposure, increased organ damage and mortality

• Indirect consequence
  - School absenteeism impacting intellectual and social development
  - Decreased quality of life
  - Increased healthcare cost (more medication and unused medication, hospitalization, visits)
Potential risk factors for nonadherence

• Socioeconomic
  - Non-white, male, Un/underinsured, lack of family support, family conflict, parental anxiety/over-protection

• Patient-related factors
  - Knowledge, organization/forgetfulness, lower self-efficacy, motivation, health beliefs, emotional disturbance, peer pressure, high-risk behaviors, assuming the SICK role

• Condition-related factors
  - Longer disease duration (TREATMENT FATIGUE), LOW disease activity, LESS fear of acute problems

• Treatment-related factors
  - Polypharmacy, visible adverse effects

• Healthcare system/team
  - Less active involvement in decision-making, poor communication, less follow-up
Factors that may impair functioning and psychosocial development and health

- **Body Image**
  - Growth failure, short stature, pubertal delay, localized growth disturbance, joint deformity, rash, striae, scars, hirsuitism, obesity

- **Self-esteem and social maturation**
  - Limited mobility, strength leading to functional limitations, reduced fitness, inability to perform chores/gym/participate in sports

- **Mental health**
  - Impaired due to body image, self-esteem, social maturation
  - Loss of control, learned helplessness, depression, anxiety
  - Parental OVERprotection ("vulnerable child syndrome")
  - Lack of sympathetic peers and significant others
Transition to adult care is a PROCESS

• Mixed emotions for physicians, patient and family
• High risk for dropping out of healthcare system
• “Start at diagnosis”
• Long-term sequential goals of independence and self-management
• Changing role of family
• Self-determination skills should be fostered
• Future-focused, proactive, flexible
• Portable, continuously updated medical summary
• Benefit of a Transition clinic
Goals in transition?

• Less than $\frac{1}{4}$ of adolescents are seen independently of parent

• Want assurance of privacy/confidentiality before seen alone
  - Parents answering for menstrual cycle, bowel habits of patient?!?!?

• Age-appropriate dependence on family

• Acceptance of the limits and responsibilities imposed by Lupus and its treatments
  - E.g. “I have lupus and therefore should not get a tan, because it can cause a disease flare.”
Difference in Adolescents with Lupus

- Growth and development
- Role of parents/family
- Communication/language modification
- Role of peers
- Generic health issues (e.g. sex, drugs etc.)
- Educational/Vocational issues
- Palatability of medication
- Consent/confidentiality issues
Key players in adolescent care

- **Patient should be strongest advocate**
- Parents/caregivers
- Siblings
- Friend/peers
- It takes a team
  - Neurologists, physiatrist, endocrinologist, nephrologists
  - Psychologist
  - Physical/occupational therapy
  - Teacher/school nurse
  - Social worker
So, what will happen to me now?

Poor outcomes are associated with:
• Delay in diagnosis and treatment
• Younger age at diagnosis
• Male
• Ethnicity (Black, Hispanic)
• Poor socioeconomic status
• Lower level of education
• Poor social support network
• Lack of medical adherence
Key Points

• Systemic Lupus Erythematosus is a life long disease with unpredictable flares that may affect any organ
• Childhood onset lupus appears to be more severe
• Lupus is an autoimmune disease in which the immune system is attacking the patient’s body
• The purpose of medication is to suppress the immune system and induce remission (no sign of active disease)
• Non-adherence is common in adolescence
• Transition is very important
• Trust your doctor...or change your doctor