

COMMON DRUG CLASSES IN ALSTRÖM SYNDROME

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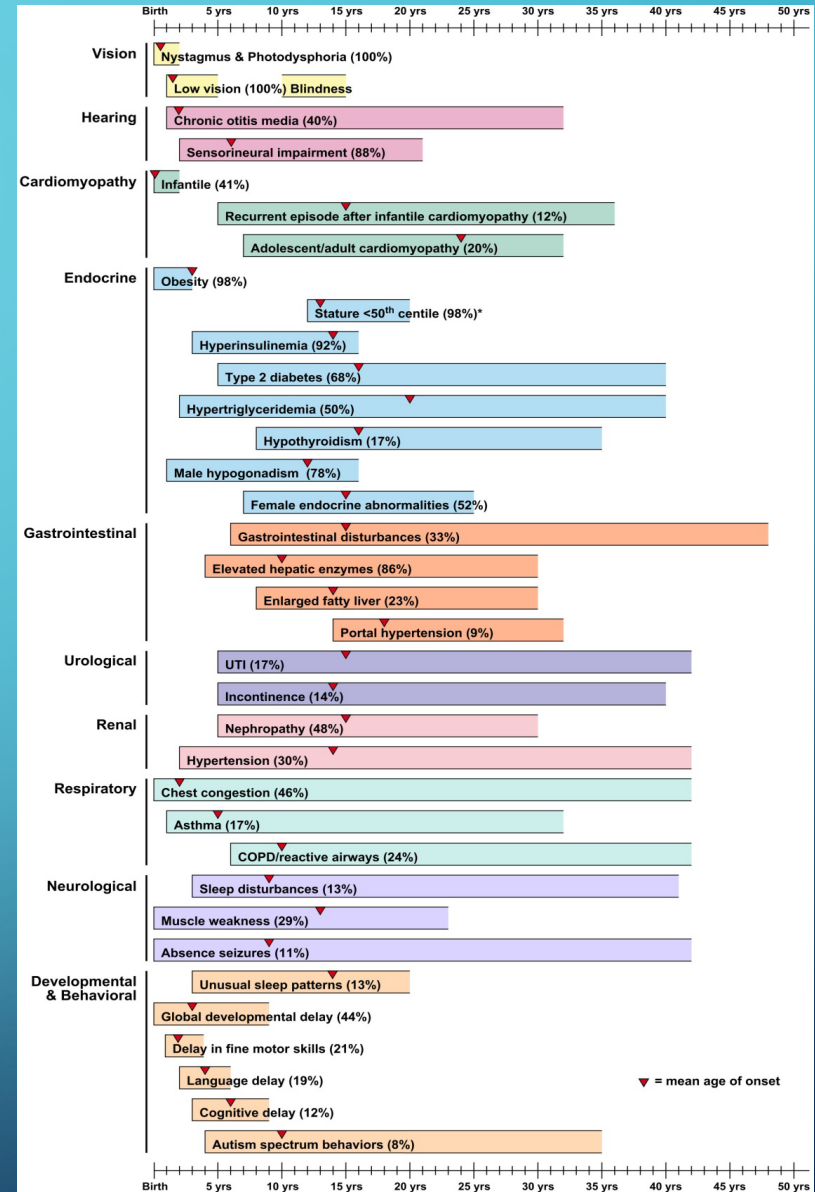
INTRODUCTION

- What is Alström Syndrome (AS)?
 - Multisystem, progressive genetic disorder
 - Visual impairment, photophobia, and hearing disturbances
 - Diabetes, extreme insulin resistance, and childhood obesity
 - Hyperlipidemia
 - Heart Failure and other cardiologic problems
 - Renal dysfunction
 - Early onset of Fatty Liver Disease
 - Respiratory Disease
 - Endocrine Disorders
 - Gastrointestinal issues
 - Developmental delays



INTRODUCTION CONT'D

- Metabolic Disorder
- Gastrointestinal issues
- Developmental delays



DIABETES AND INSULIN RESISTANCE

- Insulin Resistance commonly occurs in patients ranging from 1-4 years old
- Type 2 Diabetes Mellitus can be diagnosed as early as 5 y/o
 - Over 80% of patients aged 16 have diabetes
- Insulin doses of over 1000 IU daily have been reported
- Commonly has negative downstream effects
 - Renal failure

OBESITY AND HYPERPHAGIA

- Significant clinical feature in Alström Syndrome
- Rapid weight gain occurs between infancy and 3 years of age
- Hyperphagia present, begins in early childhood
 - Contributes to increased weight gain

COMMONLY USED DRUG CLASSES

- GLP-1 Agonists (Diabetes and Obesity)
- SGLT2 Inhibitors (Diabetes)
- Metformin (Diabetes)

COMMON DRUG CLASSES CONTINUED

- DPP – 4 Inhibitors (Diabetes)
- Insulin (Diabetes)
- Thiazolidinediones
 - Generally should be avoided if possible due to possible heart complications

GLP-1 AGONISTS

- Commonly used to treat type II diabetes, obesity and hyperphagia
- Work by slowing gastric (stomach) emptying, increasing fullness after eating, and blocking glucagon secretion
- Result in significantly decreased A1C
- Weight loss has been observed
- **Serious Side Effects: Pancreatitis and stomach pain**
 - Monitoring of pancreatic enzymes when beginning GLP-1 therapy is paramount

GLP-1 AGONIST EXAMPLES AND FORMULATIONS

- Ozempic/Wegovy (Semaglutide)
 - Once weekly injection
- Rybelsus (Semaglutide Oral)
 - Once daily
- Trulicity
 - Once weekly Injection
- Victoza
 - Once Daily Injection

SGLT2 INHIBITORS

- Work by excreting sugar in the urine by blocking fluid and sugar reabsorption
- Synergistic with Loop Diuretics for decreasing fluid retention
- Widely considered a diuretic
- Some possible side effects: Dehydration, low blood pressure, and Urinary tract infections

SGLT2 INHIBITOR EXAMPLES

- Generic drug name generally ends in “flozin”
- Jardiance and Invokana are commonly used examples
- Dosing: Once daily by mouth

HYPERTRIGLYCERIDEMIA AND CHOLESTEROL

- Many people with AS have moderate or severe hypertriglyceridemia
 - 200-1000 mg/dL
- Triglyceride levels of > 1000 mg/dL often leads to acute pancreatitis
- Lower HDL cholesterol (“good cholesterol”) than expected
- Dyslipidemia
 - Commonly known as high cholesterol

COMMON DRUG CLASSES

- Statins
 - First line treatment for cholesterol lowering
 - Lower the risk of heart attack and stroke as well as other cholesterol related complications
 - Metabolized by the liver
 - Use with caution in liver failure
 - Rosuvastatin, atorvastatin and pravastatin are common examples
 - Common side effect: Muscle pain, if severe contact your doctor immediately.

COMMON DRUG CLASSES CONTINUED

- **Fibrates**

- Primarily indicated for decreasing triglycerides
- Poorly tolerated in the stomach
- Fenofibrate and gemfibrozil are commonly used

- **Omega 3 Fatty Acids**

- Sold as over the counter and by Rx
- Vascepa (by prescription) and generic fish oil (OTC) are common forms

HEART FAILURE AND OTHER CARDIOLOGIC PROBLEMS IN AS

- Infantile Cardiomyopathy
- At risk for Ischemic Cardiac Disease later in life
- Heart Failure
 - Proper medication management is paramount
 - ARNI/Beta Blocker in adult patients
 - ACEI/Beta Blocker in pediatric patients

COMMON DRUG CLASSES IN HEART FAILURE

- Beta Blockers
 - Block the effects of Epinephrine (adrenaline)
- ACE Inhibitors/ARBs/ARNI
 - Work by blocking the angiotensin/aldosterone pathway
 - Also used to treat hypertension
 - Very rare but serious side effect is angioedema (rapid swelling of the face and throat)
- Diuretics
 - Work by causing the body to excrete excess fluid through the urine

BETA BLOCKERS

- Block the effects of Epinephrine (adrenaline)
- Metoprolol and carvedilol are used in both pediatric and adult CHF
- Possible side effects include low heart rate, low blood pressure, dizziness, and cold extremities

ACE INHIBITORS AND ARBS

- ACE-I or ARB therapy in combination with a beta blocker is the first line treatment in pediatric heart failure
- ACE-I Examples: Lisinopril and enalapril
 - Enalapril Suspension is very common for pediatric use
 - Common side effect: Dry Cough
- ARB Examples: Valsartan and irbesartan
- Dosing: Start low and slow
 - Titrate up as tolerated with a beta blocker to maximum tolerated dose
 - Be aware of low blood pressure when considering tolerated dose

ARNI

- Entresto is currently the only ARNI on the market
- Entresto in combination with a beta blocker is the first line treatment in adult heart failure
- Some possible side effects: Angioedema and low blood pressure
- Dosing: Start low and slow
 - Titrate up as tolerated with a beta blocker to maximum tolerated dose
 - Be aware of low blood pressure when considering tolerated dose

DIURETICS

- Used to excrete excess fluid through the urine thus decreasing fluid retention
- Loop Diuretics
 - Can lead to low potassium and dehydration
 - Furosemide, bumetanide and torsemide are commonly used
- Thiazide Diuretics
 - Hydrochlorothiazide and chlorthalidone are commonly used
 - Commonly used with spironolactone to conserve potassium
- Potassium Sparing Diuretics
 - Spironolactone
 - Can lead to increased potassium levels
- SGLT2's

HYPOTHYROIDISM

- Caused by an underactive thyroid gland
- Commonly treated with levothyroxine, liothyronine or Armour Thyroid

GASTROINTESTINAL ISSUES

- Observed in patients of all ages
- Gastroparesis
- GERD
- Nausea/vomiting

COMMONLY USED DRUG CLASSES IN GERD

- Proton Pump Inhibitors

- Work by blocking gastric acid production
- Available by Rx and OTC
- Examples include omeprazole, pantoprazole, lansoprazole, and esomeprazole
- Can cause osteopenia with long term use.

- H2 Histamine Antagonists

- Block histamine receptors
- Available by Rx and OTC

MEDICATION REGIMEN CONSIDERATIONS

- Proper medication regimens and adherence are paramount to longevity
 - Setting up medications weekly can be very helpful
- Always check with your Doctor or Pharmacist before starting a new drug therapy
- “Pill” Burden is significant
 - Persons in their teens and early twenties are frequently on as many as 20 medications

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