195-P
ANAPLEROTIC THERAPY FOR ADULT POLYGLUCOSAN
BODY DISEASE (APBD) WITH GLYCOCEN BRANCHER
ENZYME DEFICIENCY
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APBD is a degenerative neurogenetic disorder that is often caused by
glycogen brancher enzyme deficiency. It is therefore the adult form of
glycogen storage disease type IV (GSD IV). There is currently no effective
therapy and the pathogenesis of the disease is poorly understood.
We identified indicators of energy deficiency such as symptomatic hypoglyce-
mia in an APBD patient on submaximal exercise. Symptomatic hypogly-
cemia is known to occur in an animal model of GSD IV and in other
glycogen storage diseases. We therefore hypothesized that (i) decreased
glycogen degradation leads to energy deficit in neurons and glial cells; (ii)
anaplerotic therapy using triheptanoin, a 7-carbon triglyceride, will supply
needed substrate to the citric acid cycle to correct the energy deficit and
thus slow, halt or reverse the progression of the disease. Open label trial at
a triheptanoin dose of 1–2 g/kg of body weight/24 hours showed a mean
improvement of 10% in the 6-minute walk test over a mean follow up of
8.5 months (n=5, p=0.06). One patient had a 126 feet improvement (9.5%) at
the 25 months time point. Physical Function score increased in 4/5
patients on the SF-36 health survey questionnaire. We consequently
initiated a randomized controlled study in 18 subjects ingesting a diet
supplemented with triheptanoin or a control long chain vegetable oil.
Outcome measures include 6-minute walk test, motion capture gait analysis
and quality of life. Should this therapeutic approach be successful, it may
also be applied to other glycogen storage disorders.

196-P
RETROSPECTIVE EVALUATION OF CLINICAL PRACTICE:
USING A MODIFIED STARCH IN THE MANAGEMENT
OF GLYCOCEN STORAGE DISEASE
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Background: Cornstarch therapy has been the mainstay of treatment for
Glycogen storage disease for over two decades. Recent cross over trials of
a modified cornstarch (Glycosade) have demonstrated improved fasting
times and short term metabolic control. Longer term studies have not yet
been reported.
Objectives: To compare the use of Glycosade as part of a standard dietary
regimen in the longer term in 11 Glycogen storage disease patients (Type
Ia, Ib and III) vs traditional uncooked cornstarch therapy / Evaluating
fasting tolerance, height and weight, appetite and secondary metabolites.
Methods: Glycogen storage disease patients under care of the Evelina
Children’s hospital (Type Ia, Ib and III) aged 3–18 yrs taking cornstarch as
part of their dietary management were included in the service evaluation.
Data from starch loading tests and clinic reviews were collated from
electronic patient records, medical and dietetics notes
Conclusion: Overall median fasting tolerance was 6 hrs on UCCS and
8 hrs on Glycosade. Most of the effect was observed in Type Ia. There
were no remarkable improvements in growth; however 3 patients reduced their
weight. 5 out of 9 patients who changed to Glycosade reported improve-
ments in appetite. The lactate profiles of Type I patients taking Glycosade
revealed higher mean profiles ≥ 4 hours fasting compared to UCCS.
However in Type III patients fasting free fatty acids were comparable using
both starches.

197-P
IMPROVING GALACTOSEMIA SCREENING BY DECREASING
THE FALSE POSITIVE RECALL RATE: THE SWEDISH
EXPERIENCE
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Background: High rates of false positive cases of galactose-1-phosphate
uridyltransferase deficiency (GALT-deficiency) are common in newborn
screening programmes. This results in high costs for follow up and anxiety
for parents. To minimize this we have developed a rapid, simple and cheap
method to verify positive cases of classical galactosemia. All samples with
less that 15% activity in the Beutler-test are tested for elevated galactose
levels using the rapid GAL-DH-test. It is ready within an hour and the
patients can thus still be recalled urgently.
Method: The rapid GAL-DH-test is a fluorometric assay where galactose
can be approximated. Galactose dehydrogenase (GAL-DH) catalyses the
oxidation of galactose and the reduction of NAD+ to NADH. The amount
of NADH is proportional to the amount of galactose. The test is considered
positive for galactose if NADH is produced, as demonstrated by
fluorescence under ultraviolet light.
Results: In 1,522,291 screened newborns between the years 1992–2008, 22
newborns were recalled and 18 cases of GALT-deficiency were
confirmed. No missed cases have been reported.
Conclusions: The rapid GAL-DH-test has been in use for almost 20 years at
the Swedish newborn screening laboratory. Since the introduction of it in
combination with a cut off value of less than 15% for the Beutler test we
have had less than one false positive case for every true positive case of
classical galactosemia. All confirmed cases have had an activity of less
than 10% in the Beutler-test. This 2-tier approach gives a negligible false
positive rate at a low cost.

198-P
TRANSALDOLASE DEFICIENCY: 4 NEW PATIENTS AND NEW
PATHOPHYSIOLOGICAL INSIGHTS ON THE
PENTOSE-PHOSPHATE PATHWAY
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Background: Transaldolase deficiency, an inborn error of the pentose
phosphate pathway has been diagnosed so far in 10 patients from 6
families. All presented as neonates, or even prenatally, with liver disease
and the clinical courses have been diverse.
Patients: We present 4 new patients from 2 families of African origin. The
2 siblings from the first family presented with low birth weight, cutis laxa,
amenia, thrombopenia, cholestasis, elevated transaminases and liver failure.
The 2 siblings from the second family presented with hepatosplenomegaly,
elevated transaminases and failure to thrive in the first months of life.
All patients developed progressive liver failure and cirrhosis at various
ages.
Methods and Results: Elevation of erythritol, arabitol and ribitol,
sedoheptulose and sedoheptulose-7-phosphate were found in all patients’
urine. Enzyme studies and molecular investigations confirmed the
diagnosis. In one patient, respiratory chain complex 1 deficiency was
found in liver and fibroblasts.
Conclusions: The new patients confirm that TALDO deficiency is
panethnic and the constant hallmarks include liver impairment with
cirrhosis associated to hematological abnormalities and abnormal polyps
in urine. The respiratory chain findings in the liver of one of our patients
may suggest novel mechanisms for liver damage in TALDO deficiency that
has to be confirmed in other patients.