Summary of Results for Laypersons

What was the Study Called?

A Multicentre, Open-label, Single Dose, Phase 1 Study to Evaluate the Pharmacokinetics, Safety and Tolerability of Mirabegron Oral Suspension in Pediatric Subjects from 3 to Less than 12 Years of Age with Neurogenic Detrusor Overactivity (NDO) or Overactive Bladder (OAB).

Why was this Study Needed?

Neurogenic detrusor overactivity (called NDO) describes a problem where bladder control is poor due to problems with the nerves that control the bladder. People with NDO can have periods of high pressure in their bladder. This is dangerous for the kidneys and can lead to problems like losing urine involuntarily (incontinence). This condition is different from overactive bladder (called OAB).

People with OAB do not have problems with the nerves that control the bladder, but they may have symptoms such as:

- Sudden need to urinate which is difficult to delay (called urinary urgency).
- Having to empty the bladder more often than usual (called increased urinary frequency).
- Not being able to control the emptying of the bladder and losing urine involuntarily (called urge incontinence).

There are several medicines for OAB in adults. They include mirabegron (also known as YM178 and Betmiga®, Myrbetriq® and Betanis®) and tolterodine (also known as Detrusitol® and Detrol®). In children, the most common medicine used for NDO and OAB is oxybutynin. This study is part of the program to investigate the effect of mirabegron in children in who have NDO and OAB. Mirabegron tablets are approved for use by adults with OAB, but not for use by children. Tablets are difficult for children to swallow. A suspension was developed that is easier to be used in children. The formulation used in this study was mirabegron prolonged-release granules for oral suspension. Before use, the granules need to be stirred into a liquid to make a suspension. This type of suspension is easy to swallow by children.

This study was conducted in children aged 3 to 11 years who had NDO as well as children aged 5 to 11 years who had OAB. The study helped answer how well mirabegron is taken up into the body in children when taken as a suspension and how long it stays in the body. It was also important to find out what unwanted effects these patients had from the study drug. The study was not designed to test whether mirabegron was useful or effective.

This study took place at 2 clinics in Denmark and 1 clinic in Poland from December 2015 to September 2016. When the study ended, the sponsor (Astellas) reviewed all the study information and created a report of the results. This is a summary of that report.

What Kind of Study was this and Who Took Part in it?

This was an "open-label" study. All patients knew that they took mirabegron suspension.

Children could take part in the study if:

- They were aged 3 to 11 years and had NDO or aged 5 to 11 years and had OAB.
- They were able to swallow the study medication.

Patients could not take part in this study if:

- Their heart rate was abnormal.
- Their kidneys did not work well.
- They had high blood pressure.
- They had a medical condition that could interfere with the study outcome.
- They had OAB and a condition known as constipation (infrequent or hard to pass bowel movements).
- They had NDO and a condition known as fecal impaction (dry, solid stool that cannot pass out of the body).

The study had 5 study visits. At visit 1, patients were checked to see if they could be in the study. Patients who could be in the study went off their OAB and NDO medicines. Their heart rate and blood pressure was measured for 24 hours by using a medical device (Holter). When patients arrived at the clinic on the morning of the treatment day (day 1), they had fasted from at least midnight. They ate a light breakfast at the clinic. The patients took a dose of mirabegron (between 80 to 130 mg based upon weight) within 1 hour after breakfast. The patients did not eat again until 2 hours after they took the study medicine. Blood samples were taken from all patients before and after they took the study medicine. The patients had study visits for blood sampling on day 2 and on 2 other days between days 3 and 7.

A total of 9 patients were in this study and each patient took 1 dose of study treatment.

	Number of Patients (out of 9 patients)
Age Group	
Aged between 4 and 10 years	9
Sex	
Boys	4
Girls	5
Clinic Location	
European Union Countries	9
Denmark	5
Poland	4
Outside European Union	0

What Were the Study Results?

This study was conducted in children aged 3 to 11 years who had NDO as well as children aged 5 to 11 years who had OAB. The study helped answer how well mirabegron is taken up into the body and how long it stays in the body.

The blood level of the mirabegron suspension in children was similar to blood level patterns seen in a previous study in children who took the tablet form of mirabegron and to the blood levels in adults who took 50 mg of mirabegron once a day for 1 week. The highest amount of mirabegron in blood was reached at 3.93 hours after taking the study medicine. Most of the mirabegron left the body within 26 hours. The results of this study helped define the doses for future mirabegron studies in children.

What Adverse Reactions did Patients Have?

A lot of research is needed to know whether a medicine causes a medical problem. So when new medicines are being studied researchers keep track of all medical problems that patients have while they are in the study. These medical problems are called "adverse events" and are recorded whether or not they might be caused by the treatment taken. An "adverse reaction" is any medical problem or "adverse event" that is judged by the study doctor to be possibly caused by a medicine or treatment used in the study.

There were no adverse reactions during this study.

An adverse reaction is considered "serious" when it is life-threatening, causes lasting problems or needs hospital care.

There were no serious adverse reactions during this study.

Where Can I Learn More About This Study?

Astellas may perform additional studies to better understand mirabegron.

This summary of the clinical study results is available online at http://www.astellasclinicalstudyresults.com.

Please remember that researchers look at the results of many studies to find out how well medicines work and which adverse reactions they might cause. If you have questions about mirabegron, please discuss these with your doctor.

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