CONCERTA (methylphenidate HCl): Clinical Study Report Synopsis 42603ATT3004

SYNOPSIS

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<table>
<thead>
<tr>
<th>Name of Sponsor/Company</th>
<th>Janssen-Cilag Medical Affairs EMEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Finished Product</td>
<td>Concerta®</td>
</tr>
<tr>
<td>Name of Active Ingredient(s)</td>
<td>Methylphenidate HCl</td>
</tr>
</tbody>
</table>

Protocol No.: 42603ATT3004

Title of Study: An Open-Label, Multicentre Study to Evaluate the Long-Term Safety of Prolonged Release (PR) OROS® Methylphenidate (18, 36, 54, 72 and 90 mg/day) in Adults with Attention Deficit/Hyperactivity Disorder.

Coordinating Investigator: Prof. Jan Buitelaar, M.D. - UMC St.Radboud (966), Nijmegen; The Netherlands

Publication (Reference): None

Study Period: 13 January 2006 (first subject first visit)
10 July 2008 (last subject last visit)

Phase of Development: III

Objectives:
The primary objective of the open-label phase was to assess long-term safety and tolerability of flexibly dosed (18-90 mg/day) PR OROS methylphenidate (MPH) in adult subjects diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD) who had completed the 7-week open-label phase of the 42603ATT3002 study.

Secondary objectives of the open-label phase were:
- to assess the long-term efficacy of PR OROS MPH expressed as change in the sum of the inattention and hyperactivity/impulsivity subscales of the investigator-rated Conners' adult ADHD rating scale (CAARS);
- to assess the long-term effect on ADHD symptoms expressed as change in CAARS subscale scores;
- to assess the long-term effect on overall functioning, work, family and social functioning, and quality of life (QoL) parameters as measured by the Clinical Global Impression Scale – Severity (CGI-S) and – Change (CGI-C), Sheehan Disability Scale (SDS), Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) and Global Assessment of Effectiveness (GAE) and CAARS Self-Report: Short Version (CAARS-S:S), respectively.

The study was amended to include a 4-week, double-blind, randomized withdrawal phase (International Amendment 3 [Amendment INT-3]).

The primary objective of the double-blind, randomized, placebo-controlled withdrawal phase was to evaluate maintenance of treatment effects of PR OROS MPH in adult subjects with ADHD who had received long-term (at least 52 weeks) treatment with PR OROS MPH at the optimal dose.

Secondary objectives of the double-blind phase were:
- to evaluate the treatment effect as rated by the investigator on the GAE scale or the subject on the SDS and Q-LES-Q scales;
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- to evaluate the subject’s self report of ADHD symptoms associated with the use of PR OROS MPH compared to placebo (CAARS-S:S);
- to evaluate the effect of PR OROS MPH compared to placebo based on CGI-S and CGI-C;
- to evaluate the number of subjects showing an increase of < 30%, 30-50%, or > 50% in the investigator-rated CAARS total score and of subjects with CAARS total score 0-17 at double-blind endpoint in the PR OROS MPH group and the placebo group;
- to evaluate safety through AE reporting, vital signs and clinical laboratory tests.

**Methods:** This was an open-label extension of study 42603ATT3002 followed by a double-blind, randomized, placebo-controlled, withdrawal phase conducted at multiple sites in Europe that evaluated PR OROS MPH in adult subjects with ADHD.

During the open-label phase of study 42603ATT3004, subjects were maintained on a flexible dose (18, 36, 54, 72, or 90 mg/day) of PR OROS MPH. Subjects who entered study 42603ATT3004 immediately after study 42603ATT3002 continued the optimal dose as determined in study 42603ATT3002. Subjects who experienced an interruption of study drug administration after 42603ATT3002 for up to 30 calendar days before entering 42603ATT3004 were titrated to an optimal dosage. Treatment duration was extended from 52 weeks to 72 weeks (International Amendment 2 [INT-2]) or 108 weeks in Germany (GER-4/INT-3) to allow continued treatment with PR OROS MPH until subjects could enter the double-blind phase (International Amendment 3 [INT-3]).

An interim period was allowed for subjects who completed the open-label phase of 42603ATT3004 INT-1 prior to approval of INT-2. Subjects continued open-label PR OROS MPH using commercial drug supply until they could enter the extended (72 weeks) open-label treatment period (INT-2).

The double-blind phase was designed to evaluate maintenance of treatment effects following long-term use of PR OROS MPH (INT-3). To enter the double-blind phase, subjects were required to have received at least 52 weeks of treatment with PR OROS MPH and to provide informed consent. During the double-blind phase, subjects were randomly assigned in a 1:1 ratio to continued treatment with PR OROS MPH at a fixed dose (i.e., the dose received at the end of the open-label phase) or placebo for 4 weeks.

One week after a subject’s final dose of study medication, a post-study visit for collection of additional safety data was conducted. For subjects not participating in the double-blind phase, this visit was planned one week after last medication intake in the open-label phase. For subjects continuing into the double-blind phase, the post-study visit was planned one week after the last medication intake in the double-blind phase.

The following medications were not allowed during the study (neither in the open-label nor in the double-blind phase): alpha-2 adrenergic receptor agonists, tricyclic antidepressants*, theophylline, coumarin anticoagulants or anticonvulsants, selective serotonin reuptake inhibitors (SSRIs)* (including fluoxetine*), monoamine-oxidase (MAO) inhibitors, herbal and over-the-counter stimulant diet preparations or drugs that contain stimulants, any treatment for ADHD (except MPH-containing medication*), and any other medication likely to interfere with safe administration of MPH.

* Unless the subject had been on a stable dosage during the 42603ATT3002 study, in which case treatment could continue as long as dosage remained unchanged for the duration of the study.

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a According to inclusion criterion 8, subjects were only allowed to take PR OROS MPH for the treatment of ADHD during the study.
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Number of Subjects (planned and analyzed):
- planned in open-label: no formal sample size
- analyzed in open-label: 155
- planned in double-blind: 80
- analyzed in double-blind: 45

Diagnosis and Main Criteria for Inclusion:
- Adult male or female subjects, aged between 18 and 65 years, inclusive;
- Diagnosis of ADHD according to the DSM-IV and confirmed by the Conners’ Adult ADHD Diagnostic Interview for DSM-IV;
- Described chronic course of ADHD symptomatology from childhood to adulthood, with some symptoms present before age 7 years and continuing to meet DSM-IV criteria at the time of assessment. ADHD was not to be diagnosed if the symptoms were better accounted for by another psychiatric disorder (e.g. mood disorder [especially bipolar disorder], anxiety disorder, psychotic disorder, personality disorder);
- Completion of the open-label phase in the 42603ATT3002 study according to protocol, or within 30 days of completion of the open-label phase of the 42603ATT3002 study.

Test Product, Dose and Mode of Administration, Batch No.:

Open-label phase: PR OROS MPH 18, 36, and 54-mg tablets; doses: 18, 36, 54, 72, or 90 mg/day; oral.

For all countries except Portugal, open-label trial medication was sourced from commercial stock in the respective country and relabeled. Trial medication for Portugal was manufactured by ALZA Corporation in the USA and relabeled/packaged by Fisher USA, under the responsibility of the sponsor. Batch numbers for trial medication used in Portugal were: 0542670 (36 mg) and 0543557 (54 mg). The 18-mg tablets were not used in Portugal.

Double-blind phase: PR OROS MPH 18, 36, and 54-mg tablets and matching placebo; doses: 18, 36, 54, 72, or 90 mg/day; oral.

Batch numbers for medication used during the double-blind phase were: 0014983 (18 mg), 0014985 (36 mg), 0017210 (54 mg), 0015065 (placebo).

Duration of Treatment:
Subjects were treated for up to 72 weeks in the open-label phase (up to 108 weeks in Germany) and for 4 weeks in the double-blind phase of the study.

Criteria for Evaluation:

Efficacy: CAARS, CGI-S, CGI-C, CAARS-S:S, SDS, Q-LES-Q, GAE

Safety: adverse events, laboratory tests, vital signs and body weight, physical examination, ECG (Germany only)

Statistical Methods: Intent-to-treat analysis, paired t-test, ANCOVA, Wilcoxon’s signed rank test, descriptive statistics.

The analysis set for the primary efficacy analysis was the intent-to-treat population. In the double-blind phase, the per-protocol population was used as a sensitivity analysis for the primary efficacy parameter. The intent-to-treat population was used for the secondary efficacy analyses.

In the open-label phase, there were two time points of efficacy assessments (at baseline and at the end of the open-label phase [except for the German patients, Amendment GER-1/INT-1]). Depending on the distribution of the scores, a paired t-test was performed or a Wilcoxon’s matched pairs signed ranks test. The hypothesis to be tested was that there was no difference between baseline and endpoint.
The primary endpoint in the double-blind phase was the comparison between the PR OROS methylphenidate group and placebo group for the change in the sum of the inattention and hyperactivity/impulsivity subscale scores of the investigator-rated CAARS from double-blind baseline to double-blind endpoint. The change from double-blind baseline score at each time point and at endpoint in the double-blind phase was analyzed using an analysis of covariance (ANCOVA) model. The model included treatment, sex and country as factors and age and baseline sum of inattention and hyperactivity/impulsivity subscale scores as covariates. As there is only one comparison of interest for the primary objective of the double-blind phase, no correction for multiplicity was done. If applicable, secondary endpoints in the double-blind phase were analyzed in a similar fashion as the primary parameter, i.e., using ANCOVA. In case of categorical data, an alternative test was used. In addition to the secondary efficacy endpoints as defined per protocol, two additional endpoints were defined prior to breaking of the study blind to assess the loss of effect: 1) a comparison between treatment groups of the proportion of subjects with an increase in CGI-S score from double-blind baseline of 1 or more and 2) a comparison between treatment groups of the proportion of subjects with either an increase in CGI-S score from double-blind baseline of 2 or more or a discontinuation due to lack of efficacy during the double-blind period.

RESULTS OPEN-LABEL PHASE:

SUBJECT AND TREATMENT INFORMATION:

In total, 156 subjects were screened of which 155 were treated in the open-label phase of this study. Overall, 99 subjects (63.9%) completed and 56 subjects (36.1%) discontinued the open-label phase. Main reasons for discontinuation were the occurrence of adverse events (n=16), withdrawal of consent (n=15), and being lost to follow-up (n=11).

In the “intent-to-treat / open-label” population, most subjects (98.1%) were White, 54.2% were male, and mean (SD) age was 35.0 (10.60) years.

The mean (SD) duration of treatment during the open-label phase in study 42603ATT3004 was 437.1 (206.75) days (approximately 62 weeks). The mean (SD) dose (excluding zero doses) for this period was 54.3 (21.04) mg daily and the most frequently used final dose was 36 mg PR OROS MPH, used by 35.9% of subjects.

Efficacy:

All efficacy parameters showed an improvement at endpoint compared to baseline. Improvement was statistically significant for the investigator-rated CAARS and CGI-S scales as well as for the self-reported CAARS-S:S and SDS scales, indicating a reduction of ADHD symptoms and their impact on the subjects’ daily activities.
### CAARS Total Score
Mean Change at Endpoint (SD)  
-1.9 (7.82)  
**p-value**: 0.003

### CAARS Hyperactivity/Impulsivity subscale
Mean Change at Endpoint (SD)  
-0.9 (4.36)  
**p-value**: 0.010

### CAARS Inattention subscale
Mean Change at Endpoint (SD)  
-1.0 (4.63)  
**p-value**: 0.008

### CAARS-SS
Mean Change at Endpoint (SD)  
-3.1 (9.63)  
**p-value**: <0.001

### CGI-S
Median Change at Endpoint (Range)  
0.0 (-4 - 3)  
**p-value**: 0.007

### CGI-C
Median Endpoint Score (Range)  
3.0 (1 - 6)  
**p-value**: -

### GAE
Median Endpoint Score (Range)  
2.0 (0 - 3)  
**p-value**: -

### Q-LES-Q
Mean Change at Endpoint (SD)  
1.4 (15.15)  
**p-value**: 0.275

### SDS
Mean Change at Endpoint (SD)  
-1.7 (6.16)  
**p-value**: <0.001

### SAFETY:
Most subjects (126; 81.3%) experienced one or more treatment-emergent adverse events during the open-label phase. The majority (93.7%) of the adverse events during open-label treatment (occurring in 63.9% of subjects) were mild or moderate in severity. Twenty-seven (17.4%) subjects reported at least one severe adverse event.

There were no deaths during the study. Twelve subjects (7.7%) experienced one or more serious adverse events, none of which were considered related to PR OROS MPH by the investigator. Each SAE with a distinct MedDRA (Medical Dictionary for Regulatory Activities) preferred term occurred in only 1 subject. Fifteen subjects (9.7%) permanently discontinued open-label medication due to at least one adverse event. One additional subject discontinued study 42603ATT3004 for an AE that started during study 42603ATT3002 (i.e., not treatment-emergent in 42603ATT3004). None of the AEs that led to premature discontinuation during the open-label phase were reported in more than two subjects. Sixty-two subjects (40%) experienced one or more adverse events that were considered at least possibly related to study medication by the investigator.

### ITT / Open-Label
<table>
<thead>
<tr>
<th>Number of subjects with . . . , n (%)</th>
<th>PR OROS MPH (N=155)</th>
</tr>
</thead>
<tbody>
<tr>
<td>at least one AE</td>
<td>126 (81.3%)</td>
</tr>
<tr>
<td>at least one severe AE</td>
<td>27 (17.4%)</td>
</tr>
<tr>
<td>at least one SAE</td>
<td>12 (7.7%)</td>
</tr>
<tr>
<td>at least one AE for which trial medication was permanently stopped</td>
<td>15 (9.7%)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>at least one AE considered at least possibly related to trial medication by the investigator</td>
<td>62 (40.0%)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> One additional subject discontinued study 42603ATT3004 for an AE that started during study 42603ATT3002 (i.e., not treatment-emergent in 42603ATT3004).

The proportion of subjects who reported at least one adverse event that was coded to a given system organ class was highest for the system organ classes infections and infestations (39.4%), psychiatric disorders (32.3%), and nervous system disorders (30.3%). The most frequently reported adverse events were headache, nasopharyngitis, restlessness, insomnia, back pain, influenza, hypertension, drug effect decreased, and depressed mood.
Evaluation of selected adverse events of special interest revealed a total of 19 subjects (12.3%) with events that were cardiovascular in nature and 6 subjects (3.9%) with events that were psychiatric in nature. Adverse events of interest led to discontinuation in 5 subjects (3.2%).

The only treatment-emergent laboratory abnormality of potential clinical importance occurring in more than 1 subject at endpoint was low thyroid stimulating hormone, which was observed in 3/132 subjects (2.3%). No clinically relevant mean changes over time were observed for any of the vital signs parameters. The most frequent treatment-emergent vital sign abnormality of potential clinical importance was a high value in standing pulse rate, observed in 39 subjects (26.0%). A high value of potential clinical importance in standing and supine pulse rate was observed concurrently on at least one occasion in 10 subjects (6.6%). A concurrent high standing and supine diastolic or systolic blood pressure of potential clinical importance was observed on at least one occasion in 7-9% of subjects. Hypertension reported as an AE led to treatment discontinuation in 2 subjects (1.3%).

RESULTS DOUBLE-BLIND PHASE:

SUBJECT AND TREATMENT INFORMATION:

Of the 99 subjects who completed the open-label phase of the trial, 45 subjects continued into the double-blind phase. Twenty-three subjects were randomized to PR OROS MPH and 22 subjects to placebo. Major treatment deviations (no compliance with study medication intake) were noted for 7 subjects in the “intent-to-treat / double-blind” population, and these were excluded from the “per protocol / double-blind” population.

Thirty-eight subjects (84.4%) completed the 4-week double-blind phase. The 7 subjects who discontinued the double-blind withdrawal phase, 2 (8.7%) in the PR OROS MPH group and 5 (22.7%) in the placebo group, stopped study medication intake due to lack of efficacy.

All subjects in the “intent-to-treat / double-blind” population were White and the mean (SD) age was 36.3 (10.91) years. In the PR OROS MPH group, 47.8% of the subjects were male compared to 31.8% male subjects in the placebo group. No major differences between the groups were observed for other demographics parameters.

The dose for each subject in the double-blind phase was determined by the investigator prior to randomization, based on the stable dose taken by the subject during the last 4 weeks of the open-label phase. For the 45 subjects who received double-blind treatment, the mean (SD) open-label treatment duration (including days with missed intakes) in the 42603ATT3004 study was 647.1 days (88.30) and the range was 504 to 747 days. During the last 4 weeks of the open-label phase, 4 subjects (8.9%) had a dose change. The mean (SD) daily dose during the double-blind period was 43.0 (16.94) mg/day in the PR OROS MPH group and the equivalent of 54.8 (23.88) mg/day in the placebo group.

EFFICACY:

At double-blind baseline, i.e., after a mean (SD) open-label treatment duration with PR OROS MPH in study 42603ATT3004 of 647.1 (88.30) days (including days with missed doses), there was a difference
in baseline disease characteristics of subjects randomized to continued PR OROS MPH and subjects randomized to placebo. All efficacy assessments (i.e., CAARS, CAARS-S:S, CGI-S, Q-LES-Q, and SDS) indicated a better symptom control at double-blind baseline for subjects randomized to continued PR OROS MPH group than for subjects randomized to placebo. The mean (SD) baseline score for the primary efficacy parameter, the CAARS total score, was 12.1 (5.34) in the group randomized to PR OROS MPH and 16.5 (7.49) in the group randomized to placebo. CAARS total score increased (i.e., worsened) in both groups during the double-blind withdrawal phase, with a mean change from baseline to endpoint of 4.0 in the PR OROS MPH group and 6.5 in the placebo group. This difference between the treatment groups was not statistically significant (p = 0.2586).

Sensitivity analyses yielded similar results. In the “per protocol / double-blind” population, the change from baseline at double-blind endpoint was 4.6 and 7.3 in the PR OROS MPH group and the placebo group, respectively. The difference between the treatment groups was not statistically significant (p = 0.1901). In the subpopulation of subjects with a double-blind baseline CAARS score of less than 24, the mean (SD) scores at double-blind baseline were 12.1 (5.34) and 13.4 (5.18) in the PR OROS MPH group and the placebo group, respectively, and the mean changes from baseline were 4.0 and 6.8, respectively. Again no statistically significant difference between the 2 groups was observed (p = 0.2191).

<table>
<thead>
<tr>
<th>ITT / Double-Blind</th>
<th>Placebo (N=22)</th>
<th>PR OROS MPH (N=23)</th>
<th>p value (difference between groups)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAARS Total Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Value at DB Baseline (SD)</td>
<td>16.5 (7.49)</td>
<td>12.1 (5.34)</td>
<td></td>
</tr>
<tr>
<td>Mean Value at DB Endpoint (SD)</td>
<td>23.0 (10.41)</td>
<td>16.2 (9.42)</td>
<td></td>
</tr>
<tr>
<td>Mean Change at DB Endpoint (SD)</td>
<td>6.5 (7.82)</td>
<td>4.0 (7.61)</td>
<td>0.2586</td>
</tr>
<tr>
<td>&gt; 50% Increase at DB Endpoint, n (%)</td>
<td>8 (36.4)</td>
<td>6 (26.1)</td>
<td></td>
</tr>
<tr>
<td>CAARS Hyperactivity/impulsivity subscale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Change at DB Endpoint (SD)</td>
<td>3.4 (4.62)</td>
<td>2.5 (3.82)</td>
<td>0.4010</td>
</tr>
<tr>
<td>CAARS Inattention subscale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Change at DB Endpoint (SD)</td>
<td>3.1 (5.26)</td>
<td>1.6 (4.64)</td>
<td>0.1734</td>
</tr>
<tr>
<td>CAARS-S:S</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Change at DB Endpoint (SD)</td>
<td>4.0 (11.98)</td>
<td>4.4 (11.90)</td>
<td>0.5458</td>
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<tr>
<td>CGI-S</td>
<td></td>
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<td></td>
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<tr>
<td>Median Change at DB Endpoint (Range)</td>
<td>1.0 (-1 - 4)</td>
<td>0.0 (-1 - 3)</td>
<td>0.2616</td>
</tr>
<tr>
<td>CGI-C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median DB Endpoint Score (Range)</td>
<td>5.0 (1 - 6)</td>
<td>4.0 (2 - 7)</td>
<td>0.0422</td>
</tr>
<tr>
<td>GAE</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Median DB Endpoint Score (Range)</td>
<td>0.5 (0 - 3)</td>
<td>2.0 (0 - 3)</td>
<td>0.0254</td>
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<tr>
<td>Q-LES-Q</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Change at DB Endpoint (SD)</td>
<td>-2.7 (12.36)</td>
<td>-6.5 (11.37)</td>
<td>0.6665</td>
</tr>
<tr>
<td>SDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Change at DB Endpoint (SD)</td>
<td>1.6 (8.26)</td>
<td>2.2 (6.05)</td>
<td>0.2926</td>
</tr>
</tbody>
</table>

Analysis of the secondary efficacy parameters showed similar results. For the CAARS hyperactivity / impulsivity and inattention subscales and CGI-S the change from baseline was smaller in the PR OROS MPH group than in the placebo group. However, the difference between the treatment groups in change from baseline was not statistically significant for these scales. Fewer subjects in the PR OROS MPH group than in the placebo group had an increase in CAARS total score at double-blind endpoint of > 50%. The scores of the investigator-rated scales CGI-C and GAE at endpoint were better (i.e., lower and higher, respectively) in the PR OROS MPH group than in the placebo group and the difference between the groups was statistically significant (p = 0.0422 and 0.0254, respectively). For the subject self-reported scales CAARS-S:S, Q-LES-Q, and SDS there was a difference between the treatment groups at double-blind baseline, with better scores (i.e., lower scores for CAARS-S:S and SDS; higher score for Q-LES-Q) in the group randomized to PR OROS MPH than in the group randomized to placebo. Change from baseline was similar in the two treatment groups for CAARS-S:S.
and SDS, while it was larger in the PR OROS MPH group than in the placebo group for Q-LES-Q. There was no statistically significant difference between the treatment groups in change from double-blind baseline to endpoint for any of these scales.

The proportion of subjects with an increase from double-blind baseline to endpoint of 1 or more units in CGI-S score (i.e., with loss of treatment effect) was smaller in the PR OROS MPH group than in the placebo group (39.1% compared to 63.6%). Similarly, the proportion of subjects who either had an increase in CGI-S score of 2 or more units relative to baseline or who discontinued due to lack of efficacy was 26.1% in the PR OROS MPH group and 40.9% in the placebo group. These differences between the treatment groups were not statistically significant for either definition of loss of effect ($p = 0.1018$ and $0.2833$ for the first and second definition, respectively).

**SAFETY:**

The incidence of AEs during the double-blind withdrawal phase was comparable in the PR OROS MPH and placebo groups. There were no deaths. One subject in the placebo group experienced an SAE (not considered drug-related by the investigator) during the double-blind phase compared to none of the subjects in the PR OROS MPH group. No subjects prematurely discontinued double-blind medication due to AEs.

<table>
<thead>
<tr>
<th>ITT / Open-Label</th>
<th>Placebo (N=22)</th>
<th>PR OROS MPH (N=23)</th>
<th>All Subjects (N=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of subjects with …. n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at least one AE</td>
<td>8 (36.4)</td>
<td>7 (30.4)</td>
<td>15 (33.3)</td>
</tr>
<tr>
<td>at least one severe AE</td>
<td>3 (13.6)</td>
<td>0</td>
<td>3 (6.7)</td>
</tr>
<tr>
<td>at least one SAE</td>
<td>1 (4.5)</td>
<td>0</td>
<td>1 (2.2)</td>
</tr>
<tr>
<td>at least one AE for which trial medication was permanently stopped</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>at least one AE considered at least possibly related to trial medication by the investigator</td>
<td>5 (22.7)</td>
<td>3 (13.0)</td>
<td>8 (17.8)</td>
</tr>
</tbody>
</table>

The most frequently reported AE during the double-blind phase was hypertension, reported in 2 subjects (8.7%) in the PR OROS MPH group. All other AEs were reported in no more than 1 subject per treatment group. Except for hypertension in the 2 subjects of the PR OROS MPH group, no other adverse events of special interest were reported that were cardiovascular in nature. No adverse events of interest that were psychiatric in nature occurred during the double-blind withdrawal phase.

The only treatment-emergent laboratory abnormality of potential clinical importance occurring at double-blind endpoint was low hematocrit, which was observed in 1 subject (4.8%) in the placebo group. Small changes in mean diastolic and systolic blood pressure, pulse rate, weight or BMI were noted from double-blind baseline to endpoint across the two treatment groups. Numerically greater decreases in mean values for standing and supine diastolic and systolic blood pressure were observed in the placebo group than in the PR OROS MPH group. The most frequent vital signs abnormality of potential clinical importance was a high value in standing diastolic blood pressure, observed in 7 subjects (31.8%) in the PR OROS MPH group and 2 subjects (9.1%) in the placebo group. There were no subjects with a concurrent, treatment-emergent high value of potential clinical importance in standing and supine diastolic or systolic blood pressure during the double-blind phase.

**STUDY LIMITATIONS:**

Limitations concerning the double-blind phase of the study were:

- the sample size assumptions. At the time of sample size calculation, no relevant clinical data from a randomized withdrawal study in adult subjects with ADHD were published. Therefore the sample size assumptions were solely based on clinical judgment.
the small sample size. The planned sample size for the double-blind withdrawal phase was 80 subjects. However, of the 99 subjects who completed the open-label phase only 45 subjects consented to participate in the double-blind phase.

- No prespecified cutoffs for key assessments of efficacy were included as part of the criteria for entering the double-blind withdrawal phase.

CONCLUSION:

Flexibly dosed PR OROS MPH was generally safe and well tolerated by adults with ADHD when administered for a period of at least 52 weeks. The safety profile was in line with that reported in other ADHD studies with methylphenidate in adult subjects.

The therapeutic effect as measured by the change from baseline in CAARS total score was maintained over the open-label treatment period of at least 52 weeks. This finding was consistent with and complemented by the results for the secondary efficacy variables, the investigator-rated CGI-S, CGI-C, and GAE scales as well as for the self-reported CAARS-S:S, Q-LES-Q SF, and SDS scales, indicating a sustained reduction of ADHD symptoms and a positive impact on the subjects’ daily activities. The change from baseline was statistically significant for all efficacy parameters except Q-LES-Q SF.

The primary efficacy endpoint for the double-blind withdrawal phase failed to show a statistically significant difference between the treatment groups. Nevertheless, two of the secondary endpoints (GAE and CGI-C) showed a significant difference in favor of PR OROS MPH. All other secondary endpoints were numerically in favor of PR OROS MPH, with the exception of Q-LES-Q SF, but did not reach statistical significance. The safety results indicate that PR OROS MPH tablets were well tolerated by adult subjects with ADHD during the 4-week double-blind withdrawal phase.
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