Atropine for the Treatment of Myopia 2 (ATOM2) - 2012

THE LENS

Objective

To determine the safety and efficacy of three lower doses of atropine (0.01%, 0.1%, and 0.5%) in slowing the rate of myopia progression in children

Methods

Design: Double-blinded RCT

Sample Size: 400 children

Treatment Groups:
- 161 to atropine 0.5%
- 155 to atropine 0.1%
- 84 to atropine 0.01%

Comparison made to atropine 1% and placebo from ATOM1 study

Outcome Measures:
- Primary: Myopia progression at 2 years
- Changes in axial length at 1 and 2 years
- Side effect profile of the three doses

Results

Point 1: The 3 doses of atropine demonstrated a clinically insignificant, but statistically significant difference in myopia progression at 2 years.
- At 2 years, the myopia progression was -0.49±0.60D, -0.38±0.60D, and -0.30±0.63D in the 0.01%, 0.1%, and 0.5% groups with a statistically significant difference between the 0.01% and 0.5% groups ($p<0.001$)

Point 2: Treatment with atropine 0.01% results in a greater change in axial length at both 1 and 2 years.
- Patients treated with atropine 0.01% (0.24±0.19mm) had a statistically larger change in axial length at 1 year when compared to the 0.1% (0.13±0.18mm) and 0.5% (0.11±0.17mm) groups ($p<0.001$), which persisted at 2 years

Point 3: Treatment with atropine 0.01% minimized visual side effects and adverse events as compared to the 0.1% and 0.5% groups.
- The 0.01% group had greater preservation of accommodation amplitude with a decrease to 11.8D vs. 6.8D and 4.0D in the 0.1% and 0.5% groups
- Pupil size increased by only 1mm in the 0.01% group vs. 3mm in both the 0.1% and 0.5% groups
- Those treated with atropine 0.01% were less likely to require progressive lens power in their glasses
- Atropine-related side effects were uncommon and mild in the 0.01% group

TLDR: All 3 lower doses of atropine are effective at slowing myopia progression compared to placebo. Atropine 0.01%, the lowest dose, was clinically effective at reducing myopia progression while minimizing adverse events and visual side effects.

Chia et al. *Atropine for the Treatment of Childhood Myopia: Safety and Efficacy of 0.5%, 0.1%, and 0.01% Doses (Atropine for the Treatment of Myopia 2).* Ophthalmology. 2012 Feb;119(2):347-54