First targeted treatment success for Duchenne Muscular Dystrophy

July 25 2011

Trial participants Jack and Tom Bosanquet

(Medical Xpress) -- A team led by scientists at UCL, funded by the Medical Research Council (MRC) and AVI BioPharma, have made an important breakthrough in the development of a treatment for Duchenne Muscular Dystrophy (DMD).

Together with the MDEX Consortium, chaired by Professor Francesco Muntoni (UCL Institute for Child Health), the group show in a paper published in *The* Lancet today that a gene-based drug treatment was effective in restoring the dystrophin protein that is missing in sufferers

of DMD, in seven out of 19 trial participants.

DMD is a devastating and life-limiting condition that affects one in 3,500 male births in the general population, with around 100 cases diagnosed in the UK each year.

Three of the participants in the two highest dose cohorts showed dystrophin levels that exceeded 18 per cent of those found in normal muscle cells. There was significant statistical increase across the cohorts.

Thirteen per cent of boys with DMD could be treated with this gene specific, exon-skipping therapy, the largest group by a single antisense. Overall scientists say this approach could work for at least 70 per cent of DMD sufferers.

DMD causes progressive muscle weakness due to the breakdown and loss of muscle cells. Patients lack a single important protein in their muscle fibres called dystrophin. By the ages of eight to 12, boys become unable to walk and by their late teens or early twenties the condition can become severe enough to limit life expectancy.

In this clinical trial of 19 patients, study participants aged five to 15 at Great Ormond Street Hospital and the Royal Victoria Infirmary, Newcastle, were given weekly doses of the drug, AVI-4658. The drug had already been tested for safety and efficacy by the MDEX Consortium and AVI Biopharma in an earlier phase of the study (Kinali et al, Lancet Neurol 2009).

Professor Muntoni said: “These are very exciting results that prove the case for an even more detailed look at this genetic therapy. I’ve worked with patients with DMD for many years and this is the first time we can say with confidence that we’ve made a significant breakthrough towards finding a targeted treatment.

“Importantly, the study drug was extremely well tolerated, with no appreciable side effects detected during the study period in any of the boys. If our strategy shows continued success, this therapy could substantially reduce muscle damage in affected boys with DMD, improve the quality of life for DMD patients, their mobility and the way their condition is managed as they get older.”

Professor Max Parmar, Director of the MRC Clinical Trials Unit, said: “A large proportion of new drugs do not make it past the phase II stage of testing reached here, so there is real excitement that this treatment could work. This is a great example of partnership between the Medical Research Council, industry, universities and the NHS, undertaking experimental studies in the clinic with the potential to bring real benefits to patients and their families. What this encourages us to do now is conduct larger, longer term studies. These will enable us to see whether this drug, which brings expertise in genetics and chemistry together, can make a major long-term difference to the quality and length of life for boys with this devastating disease.”

Brothers Jack, 11, and Tom Bosanquet, 8, were enrolled on the trial. Both have DMD with a deletion from exons 45-50. Their mum, Claire, said:

“The diagnosis of DMD came as a complete shock, neither me nor my husband Ian had heard of the condition before. Receiving the diagnosis was like falling into a black hole, you don’t know how you will cope and you really feel like your whole world will fall apart.

“Jack and Tom were placed on a DMD genetic registry, co-ordinated by Action Duchenne, which is how we were approached about the clinical trial at Great Ormond Street Hospital. Enrolling was a no brainer for us, we felt from the outset that by taking part we were getting some control over something which for so long had been completely out of our hands.

We felt, at last, we could do something positive about something negative.

“Coming to the hospital was amazing; we knew we were at one of the best children’s hospitals in the world with access to some of the most experienced health care professionals.

“The boys were on the trial for 12 weeks between 2009 and 2010. Our whole family noticed a marked difference in their quality of life and mobility over that period. We feel that it helped prolong Jack’s mobility and that Tom has been considerably less fatigued.”

Provided by University College London

Citation: First targeted treatment success for Duchenne Muscular Dystrophy (2011, July 25) retrieved 20 March 2024 from https://medicalxpress.com/news/2011-07-treatment-success-duchenne-muscular-dystrophy.html