Camille Locht: An innovative solution to infant whooping cough

January 15 2014

Scientists involved in the EU-funded project ChildInnovac are about to publish in the online journal *Plos One* the results of their first clinical trial of a new nasal vaccine. Designed for infants, it targets whooping cough, a common and, sometimes deadly, infant illness. Camille Locht, a researcher at the Infection and Immunity Centre of the Lille Pasteur Institute, in France, is also the project coordinator. He tells youris.com about the advantages of the new approach, developed as part of the project, to counter the current upsurge in the number of cases of whooping cough—a disease also known as pertussis. But there is still a long way ahead before this new vaccine enters the market.

Why test a new vaccine against whooping cough, when a vaccine already exists?

The World Health Organisation has noticed a global upsurge in whooping cough cases. This disease now accounts for 20 to 40 million cases and for about 200,000 casualties per year across the world. In the USA, the highest number of cases in 60 years was recorded in 2012, with more than 48,000 cases. There is a similar trend in the UK, the Netherlands, Germany, Japan and Australia... This upsurge is attributed to a limited long-term efficacy of the traditional vaccine delivered during childhood. As a result, teenagers and adults catch whooping cough and infect infants, who are much more sensitive to the disease.

What are the advantages of the new nasal vaccine?

The whooping cough bacteria used to make this vaccine is live but attenuated. When it is inhaled, it colonises the upper respiratory tract, in the same way that the natural bacteria would do, and triggers a local immune response. This approach is specifically designed for infants. Indeed, their immune system is not mature enough to effectively respond to traditional vaccination by injection.

What are the results of the first clinical trial?

We tested the vaccine on an adult cohort of 48 people in the end of 2010. We have demonstrated that our vaccine has no noticeable side effects. Furthermore, we have an estimation of the right dose to use for the bacteria to colonise the respiratory tract and induce an immune response.

What is the next step?

The next steps will consist in finding a new formulation of the vaccine in order to make it more stable. Indeed, it is now preserved at minus 80 °C but should ultimately be kept at ambient temperature.

Also, we have to fine-tune the right dose to inhale. All these steps will be achieved in partnership with the pharmaceutical industry. For this purpose, the Lille Pasteur Institute and the technology transfer arm of the French National Institute of Health and Medical Research (Inserm) , Inserm Transfert , have signed scientific collaboration and worldwide license agreements with a US-based biotechnology company, called Iliad biotechnologies, and based in Wilmington, Delaware.

When is this vaccine likely to be available on the market ?

Not before ten years at best! Indeed, there will be several steps before we can test it on infants. There will be new clinical trials with the stabilised version of the vaccine, due to be tested first on adults and, possibly, on teenagers. We are currently in discussions with national health agencies around the world to set up such trials.

Provided by Youris.com

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