MedicalXpress

Decades-long quest to beat river blindness edges towards vaccine

January 11 2016

The world's first vaccine for a disease that causes misery for millions in Africa could be tested within five years.

Researchers have taken a major step towards developing a vaccine against river blindness, also known as onchocerciasis, which affects an estimated 17 million people throughout the world.

More than 90 per cent of cases of river blindness - listed by The World Health Organization as a neglected tropical disease - occur in west and central Africa.

River blindness is a caused by infection with the parasitic worm Onchocerca volvulus and is spread by blackflies that breed in rivers.

About 10 per cent of infected individuals develop eye conditions, one per cent become blind and 70 per cent develop very severe skin diseases which can lead to social exclusion.

Experiments have enabled researchers to identify three potential vaccine compounds that could offer protection against the parasite.

Scientists hope to take at least one of these potential vaccines to safety trials by 2020 and trials to test its effectiveness by 2025.

A vaccine would help achieve the WHO goal of eliminating river blindness from Africa.

Current control of river blindness relies on mass distribution of a single drug called ivermectin - also known as Mectizan - which has been successful in reducing incidence of the disease wherever it has been used.

However, children under five, comprising up to 20 per cent of the population in endemic regions, are excluded from ivermectin treatment.

Researchers hope to administer a vaccine to children as part of national immunisation programmes.

Ivermectin use is also compromised in much of central Africa because of co-endemic infection with eye worm Loa loa and the risk of severe reactions.

The research initiative - The Onchocerciasis Vaccine for Africa (TOVA) - was launched as a response to the London Declaration on Neglected Tropical Diseases which called for tools to eliminate river blindness from Africa.

TOVA builds on more than 30 years of research by Edinburgh academics and researchers in Africa, Europe and the US and involves 15 organisations across five countries.

Partners include the University of Liverpool, Imperial College London, the University of Glasgow, the Cameroon Academy of Sciences and Kwame Nkrumah University, Ghana.

Lead Researcher Professor David W Taylor of the University of Edinburgh's Division of Infection and Pathway Medicine began work on the causes of river blindness in 1981. Professor Taylor said: "New knowledge of the way nematode parasites regulate people's immune responses has guided formulation of experimental vaccines. A vaccine

against river blindness would complement and augment existing treatment and significantly improve the prospects for eliminating this disease from Africa."

Provided by University of Edinburgh