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[Intervention Review]

Vaccines for preventing herpes zoster in older adults

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ABSTRACT

Background

Herpes zoster, also known as 'shingles', is a neurocutaneous disease characterised by the reactivation of the latent varicella zoster virus (VZV), the virus that causes chickenpox when immunity to VZV declines. It is an extremely painful condition that can last many weeks or months and it can significantly compromise the quality of life of affected individuals. The natural process of aging is associated with a reduction in cellular immunity and this predisposes older people to herpes zoster. Vaccination with an attenuated form of VZV activates specific T cell production avoiding viral reactivation. The Food and Drug Administration has approved a herpes zoster vaccine with an attenuated active virus for clinical use among older adults, which has been tested in large populations. A new adjuvanted recombinant VZV subunit zoster vaccine has also been tested. It consists of recombinant VZV glycoprotein E and a liposome-based AS01B adjuvant system. This new vaccine is not yet available for clinical use.

Objectives

To evaluate the effectiveness and safety of vaccination for preventing herpes zoster in older adults.

Search methods

For this 2015 update, we searched the Cochrane Central Register of Controlled Trials (CENTRAL 2015, Issue 9), MEDLINE (1948 to the 3rd week of October 2015), EMBASE (2010 to October 2015), CINAHL (1981 to October 2015) and LILACS (1982 to October 2015).

Selection criteria

Randomised controlled trials (RCTs) or quasi-RCTs comparing zoster vaccine with placebo or no vaccine, to prevent herpes zoster in older adults (mean age $\geq$ 60 years).

Data collection and analysis

Two review authors independently collected and analysed data using a data extraction form. They also performed 'Risk of bias' assessment.

Main results

We identified 13 studies involving 69,916 participants. The largest study included 38,546 participants. All studies were conducted in high-income countries and included only healthy Caucasian individuals ≥ 60 years of age without immunosuppressive comorbidities. Ten studies used live attenuated varicella zoster virus (VZV) vaccines. Three studies tested a new type of vaccine not yet available for clinical use. We judged five of the included studies to be at low risk of bias.

The incidence of herpes zoster, at up to three years of follow-up, was lower in participants who received the vaccine than in those who received a placebo: risk ratio (RR) 0.49; 95% confidence interval (CI) 0.43 to 0.56, risk difference (RD) 2%, number needed to treat to benefit (NNTB) 50; GRADE: moderate quality evidence. The vaccinated group had a higher incidence of mild to moderate intensity adverse events. These date came from one large study that included 38,546 people aged 60 years or older.

A study including 8122 participants compared the new vaccine (not yet available) to the placebo; the group that received the new vaccine had a lower incidence of herpes zoster at 3.2 years of follow-up: RR 0.04, 95% CI 0.02 to 0.10, RD 3%, NNTB 33; GRADE: moderate quality evidence. The vaccinated group had a higher incidence of adverse events but most them were of mild to moderate intensity.

All studies received funding from the pharmaceutical industry.

Authors' conclusions

Herpes zoster vaccine is effective in preventing herpes zoster disease and this protection can last three years. In general, zoster vaccine is well tolerated; it produces few systemic adverse events and injection site adverse events of mild to moderate intensity.

There are studies of a new vaccine (with a VZV glycoproteic fraction plus adjuvant), which is currently not yet available for clinical use.

PLAIN LANGUAGE SUMMARY

Vaccines for preventing herpes zoster (shingles) in older adults

Review question

There is a vaccine to prevent shingles. Our objective was to evaluate the effectiveness and safety of the vaccine to prevent shingles in healthy older people.

Background

The varicella zoster virus causes chickenpox and can remain dormant inside nerve cells. After many years, it can reactivate, travel through the nerve to the skin and produce blisters along the nerve path. This is called herpes zoster or shingles. It affects people with low immunity such as older people. Before the blisters, the person may feel itching, numbness, tingling or local pain. Herpes zoster causes inflammation of the nerves and severe pain, which can affect quality of life. There are about 5.22 episodes of herpes zoster for every 1000 older people. This is increasing, in part because people are living longer.

Study characteristics

Our evidence is current to 26 October 2015. We found 13 randomised controlled trials including 69,917 healthy older adults. Only five of the 13 trials were of high quality and had a low risk of bias. Pharmaceutical companies that produce the vaccines funded all of the included studies.

Key results and quality of the evidence

All included studies were conducted in high-income countries and included only healthy elderly Caucasians (≥ 60 years) without any immunosuppressive problems.

One big study included 38,546 persons 60 years of age or older. It compared the vaccine with a placebo (fake vaccine). It was a high quality study, which showed that the vaccine is effective in preventing shingles at three years (moderate quality evidence). Adverse effects caused by the vaccine were mostly mild to moderate symptoms at the injection site. Refrigerated vaccines caused fewer injection site adverse effects than frozen vaccines. The injection of the vaccine into the muscle caused fewer adverse effects when it was injected under the skin (subcutaneously). The herpes zoster vaccine caused fewer adverse effects than the 'pneumo 23' vaccine.

A new vaccine, not yet available for clinical use, is being tested. This vaccine contains a small part of varicella zoster virus plus substances that boost the immune response of the body. A study including 8122 participants who were randomised to receive either the new vaccine or a placebo vaccine showed that those in the new vaccine group had fewer episodes of herpes zoster and more mild to moderate adverse events than those in the placebo group (moderate quality evidence).