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Importance to Vaccination Against Rabies in Travellers to Areas of Risk

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Abstract

A patient returned from Algeria showing a grade III wound (WHO standard) produced by a dog bite, was treated with rabies nerve tissue vaccines (NTVs) lacked the rabies immunoglobin, and developed a visible local reaction to the vaccine.

The last WHO position paper (2010) recommends replacing nerve-tissue vaccines with CCVs. The nerve tissue vaccines induce more-severe adverse reaction sand are less immunogenic than CCVs.

It should be assessed in travellers to areas of risk, pre-exposure vaccination, and eliminated the need to the use of rabies globulin post exposition, and avoid as much as possible the use of of nerve-tissue vaccines.

Keywords: Vaccine rabia; Developing countries; Adverse reaction

Commentary

A patient returned from Algeria in March 2014 showing a grade III wound (WHO standard) produced by a dog bite, was treated with rabies inactivated vaccine of Pasteur Institute of Algeria. The treatment lacked the rabies immunoglobulin administration indicated for such injures by WHO. Furthermore, the patient failed to complete the vaccination schedule and developed a visible local reaction to the vaccine.

Once in Spain, to intradeltoid doses of Rabipur® rabies vaccine was administered and quantification of IgG antibodies was performed after 15 days. The levels were found to exceed of 0.5 IU threshold [1].

The former vaccine administered on site belonged to the Fuenzalida and Palacios type. Derived from animal brain tissue, also called nerve tissue vaccines (NTVs), it is the most used in certain developing areas. The schedule for it involves 7 consecutive daily intradermic doses in the periumbilical area, follow by four booster subcutaneous administrations to be injected in the forearm on days 11-15-30 and 90.

A number of local reactions have been reported for such schedule involving erythema and edema on the skin a few hours after vaccination. Other mild moderate side effects have also been reported such as fever, headache, insomnia, palpitations and diarrhoea.

In this same line, neuroparalytic accidents have also been reported to pose the greatest risk by producing antibodies antimyelin spite of the high degree of purity achieved in its production. Among these grave accidents Landry paralysis of with a high mortality rate, have been reported whit a frequency between 1/8000 and 1/35000. Is more common the myelitis with low mortality and neuritic type injuries with the presence of facial paralysis, glossopharyngeal, oculomotor and optic neuritis pathology [2].

The solution to these problems found with the more powerful free cell culture vaccines of nerve tissue, considered a leap in the quality of treatment and reducing the risk of post-vaccine effects and decreasing the number the doses [3].The report of the Expert Committee on Rabies WHO recommends the use of cell culture vaccines with the power of a dose must be equal or greater than the standard WHO of 2.5 IU / ml of vaccine (OMS-1978) on days 0-3-7-14 and 28 Scheme "Essen". The sixth dose the Essen regimen to the taken on day 90 became optimal as in 1992 the WHO published new guidelines that recommended a five-dose Essen regimen (without the dose on day 90), or four dose of the schema Zagreb.

Currently various models of cell culture vaccines (CCVs) have been developed using cells human diploid (HDCV), primary chicken embryo cells (PCECV), monkey kidney cells (Vero cells) (PVRV) and purified duck embryo (PDEV) and RVA (Rabies vaccine adsorbed).

In Spain we have two vaccines, Merieux® *strain Wistar-Rabies PM* rabies virus vaccine grown in human diploid cell and Rabipur® *strain* Flury LEP rabies virus culture of primary chick embryo fibroblast cells wish is inactivated with β-propiolactone, then lyophilized administered intramuscularly.

Based on these cell culture production platforms, recently other rabies vaccines have been developed. Some of them are using different virus strains

The most often reported symptoms to these vaccines were systemic reactions, such as headache, dizziness, influenza-like illness and associated symptoms (fever, asthenia and myalgia), and local injection-site-related reactions(redness, swelling and pain).

The last WHO position paper (2010) recommends replacing nerve-tissue vaccines with CCVs. The nerve tissue vaccines induce more-severe adverse reaction sand are less immunogenic than CCVs. It is therefore imperative that production and use of nerve-tissue vaccines be discontinued as soon as possible and replaced with CCVs [4].

Furthermore, NTVs may be phased out in the next years in the remaining few countries that still use this vaccine.

Regimens will be further improved to maximize uptake and reduce clinical symptoms, for example, reduced number of doses. An abbreviated pre-exposure regimen schedule for Rabipur® may become officially available [5].

It should be assessed in travellers to areas of risk, pre-exposure vaccination, and eliminated the need to the use of rabies globulin post exposition, and avoid as much as possible the use of nerve-tissue vaccines.

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