“Case report of a physician who experienced a needlestick while working in an Ebola treatment unit in Sierra Leone on September 26, 2014” Lai et al (2015).

Reference:

Lai, L., Davey, R., Beck, A., Xu, Y., Suffredini, A.F., Palmore, T., Kabbani, S., Rogers, S., Kobinger, G., Alimonti, J., Link, C.J. Jr., Rubinson, L., Ströher, U., Wolcott, M., Dorman, W. Uyeki, T.M., Feldmann, H., Lane, H.C. and Mulligan, M.J. (2015) Emergency Postexposure Vaccination With Vesicular Stomatitis Virus-Vectored Ebola Vaccine After Needlestick. JAMA. March 5th. .

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Abstract:

IMPORTANCE: Safe and effective vaccines and drugs are needed for the prevention and treatment of Ebola virus disease, including following a potentially high-risk exposure such as a needlestick.

OBJECTIVE: To assess response to postexposure vaccination in a health care worker who was exposed to the Ebola virus.

DESIGN AND SETTING: Case report of a physician who experienced a needlestick while working in an Ebola treatment unit in Sierra Leone on September 26, 2014. Medical evacuation to the United States was rapidly initiated. Given the concern about potentially lethal Ebola virus disease, the patient was offered, and provided his consent for, postexposure vaccination with an experimental vaccine available through an emergency Investigational New Drug application. He was vaccinated on September 28, 2014.

INTERVENTIONS: The vaccine used was VSVΔG-ZEBOV, a replicating, attenuated, recombinant vesicular stomatitis virus (serotype Indiana) whose surface glycoprotein gene was replaced by the Zaire Ebola virus glycoprotein gene. This vaccine has entered a clinical trial for the prevention of Ebola in West Africa.

RESULTS: The vaccine was administered 43 hours after the needlestick occurred. Fever and moderate to severe symptoms developed 12 hours after vaccination and diminished over 3

to 4 days. The real-time reverse transcription polymerase chain reaction results were transiently positive for vesicular stomatitis virus nucleoprotein gene and Ebola virus glycoprotein gene (both included in the vaccine) but consistently negative for Ebola virus nucleoprotein gene (not in the vaccine). Early postvaccination cytokine secretion and T lymphocyte and plasmablast activation were detected. Subsequently, Ebola virus glycoprotein-specific antibodies and T cells became detectable, but antibodies against Ebola viral matrix protein 40 (not in the vaccine) were not detected.

CONCLUSIONS AND RELEVANCE: It is unknown if VSVΔG-ZEBOV is safe or effective for postexposure vaccination in humans who have experienced a high-risk occupational exposure to the Ebola virus, such as a needlestick. In this patient, postexposure vaccination with VSVΔG-ZEBOV induced a self-limited febrile syndrome that was associated with transient detection of the recombinant vesicular stomatitis vaccine virus in blood. Strong innate and Ebola-specific adaptive immune responses were detected after vaccination. The clinical syndrome and laboratory evidence were consistent with vaccination response, and no evidence of Ebola virus infection was detected.

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