LETTER TO EDITOR

Rapid Diagnosis of Herpes Zoster by Loop-mediated Isothermal Amplification in a Pregnant Woman Showing Folliculitis-like Eruption without Vesicles

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Running title: Rapid Diagnosis of Herpes Zoster by Loop-mediated Isothermal Amplification Assay

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To the Editor: Herpes zoster (HZ) is usually diagnosed by observation of typical symptoms, namely aggregation of multiple vesicles with a red halo localized in an area of a sensory nerve system and neuralgia.

A 32-year-old Japanese pregnant woman at 33 weeks of gestation was admitted to our hospital because of the miliary papules associated with spontaneous pain in her left temporal area (Fig. 1a). Two days after the spontaneous pain appeared, her left neck lymph nodes became swollen and tender. There was no mucosal involvement or abnormal biochemical findings.

The pain was too severe for the patient to sleep adequately. Although no vesicles were present, we considered HZ and performed a biopsy of the miliary papules. A 4-mm punch biopsy of the skin was divided in two parts (i.e. pathological analysis and DNA extraction). No inclusion bodies were found upon analysis in pathological analysis. Three herpes LAMP assays, herpes simplex virus (HSV)-1, HSV-2, and VZV, were performed as previously described [1, 2]. Specific amplification for VZV was detected (Fig. 1b).

Accordingly, HZ was diagnosed based on the detection of the specific VZV gene using LAMP in the acute phase. Famciclovir was prescribed at 750 mg/day for 7 days on the day of consultation. One week later, her left temporal eruptions had disappeared, leaving only pigmentation; additionally, she experienced significant pain relief. The VZV immunoglobulin G (IgG) titer in the acute phase was about 1.3 times higher than that in the resolution phase, also suggesting a diagnosis of HZ.

LAMP has adequate sensitivity and specificity for daily clinical use. In one study, when DNA was extracted from the contents of blisters, the sensitivity of LAMP versus real-time PCR was 96% for HSV, 93% for HZ, and 100% for VZV [3]. Detection of VZV-specific IgG with paired sera (i.e., acute and late phases) is available to support the diagnosis of HZ. However, it takes >1 week;

this is not suitable for rapid diagnosis and prescription of antiviral drugs.

HZ can become exacerbated in increments of hours in the acute phase of the disease. In particular, from onset through the acute phase, vesicles do not always appear in patients with HZ; instead, they often appear in the recovery phase. Therefore, the possibility of HZ should not be excluded in patients without vesicles. Patients can receive tremendous benefit from immediate administration of antiviral drugs. Various neurologic complications such as post-herpetic neuralgia, Bell's palsy, Ramsay Hunt syndrome, and transverse myelitis have been reported to occur in association with HZ. Some reports have noted that viremia occurs in patients with HZ, which can exert effects on the embryo [4, 5]. In addition, antiherpes drugs are Food and Drug Administration Category B drug which means it should be used during pregnancy only if needed. Therefore, a definitive diagnosis was essential prior to the Famciclovir prescription.

In pregnant women, HZ was rapidly diagnosed and treated in the acute phase. The use of LAMP to diagnose HZ in patients showing atypical eruptions is desirable in clinical practice.

Acknowledgement

This work was partially supported by JSPS KAKENHI Grant Number 25860828.

Conflict of interest

The authors have no conflict of interest to declare.

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Figure Legends

Figure 1. Clinical features, histological findings, and results of loop-mediated isothermal amplification (LAMP) in the present case. (a) Erythematous pustules in the left temporal area are marked by a violet pen. (b) LAMP results show amplification of DNA extracted from a tissue specimen using primers specific for herpes simplex virus (HSV)-1, HSV-2, and varicella zoster virus (VZV).