

Burrow Ink Test (BIT) Done by the Patient and Analyzed through Tele-Medicine to Diagnose Scabies in Covid Era: Our Experience

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ABSTRACT

Scabies is a contagious skin infestation caused by a mite *Sarcoptes scabiei*. Clinical presentation and symptoms help in the diagnosis. Investigations where ever possible should be performed. The main objective of the process in our report was to guide the tele-suspected scabies patient through the BIT test at home and infer the results procured through BIT with the aid of Telemedicine, in purview of the COVID era. We directed the patient to perform the BIT test at home in order to gain further information on the presence of suspected scabies, interpreted by the visual data shared by the patient to the clinician through telemedicine.

Keywords: BIT test; Diagnosis; Scabies

INTRODUCTION

Scabies is a contagious skin infestation caused by a mite *Sarcoptes scabiei*. Clinical presentation and symptoms help in the diagnosis. Investigations being microscopic examination for the presence of mite and mite products in the skin scrapings derived from suspected lesions may help in definitive diagnosis.

The 2020 International Alliance for the Control of Scabies (IACS) Consensus Criteria for the Diagnosis of Scabies include three levels of diagnostic certainty-Confirmed scabies (level A) requires direct visualization of the mite or its products. Clinical scabies (level B) and suspected scabies (level C) rely on clinical assessment of signs and symptoms. Evidence-based, consensus methods for microscopy, visualization and clinical symptoms and signs were developed, along with a media library [1].

Dermatoscopy, where available, is a useful tool to help in the diagnosis of scabies. Video Dermatoscopy, new serological tests like PCR/Elisa, and specific IgE are directed towards major mite components. Burrow ink test for diagnosis of scabies infection was found to be useful in one study [2].

OBJECTIVE

The main objective of the process was to guide the tele-suspected scabies patient through the BIT test at home and infer the results procured through BIT with the aid of Telemedicine, in purview of the COVID era. We directed the patient to perform the BIT test at home in order to gain further information on the presence

of suspected scabies, interpreted by the visual data shared by the patient to the clinician through telemedicine.

METHODS

Patients consulted online due to COVID, those patients who had symptoms suggestive of scabies were asked to perform BIT test, within the safety of his/her home. Areas where BIT needs be done were identified for the patient. Photos were taken by the patient before and after performing the ink test and tele-shared with the consultant for diagnosis and further treatment.

The patient was educated with the procedure of how the ink test is to be performed which is as follows:

Procedure for performing ink-test

The ink test is performed by applying ink (any ink can be used for this purpose) to the area of suspicion as indicated by the clinician and cleaning it with a soft tissue within 6 seconds-8 seconds of application. This would enable the ink on the surface to be cleaned out, with the help of hand sanitizer/alcohol/liquid soap, which thereby highlights the burrow present better with the ink.

To assist the patient further, a guidance video to help the patient perform the ink test was shared along with the cost of performing the test.

We have assessed the cost of performing the test, in the event the patient uses-Fountain ink bottle (can be bought in any stationary or super market), Tissue paper (can be bought in any store), Earbud

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(can be bought in any pharmacy or supermarket)

- Fountain ink: INR 0.65 (60 ml ink bottle-INR 20)
- Tissue paper: INR 1.50
- Earbud: INR 1.85 (Note: Pen tip/felt pen/dropper can be used instead of an ear bud) Total cost of performing One ink test: INR 4 which is approximately \$ 0.055

The clinical pictures of the suspected areas were taken by the patient using a phone camera and tele-shared with the consultant.

CASE REPORT

As part of this case report, we are presenting three such cases where the patients performed the BIT test at the convenience of his/her home, for which, the patients made use of the following materials:

- Fountain pen ink
- Tissue paper
- Earbud for application of ink
- Photograph taken by patient with cell phone

The patient can also use a felt-tip pen as suggested earlier as a substitute, or in the event of non-availability of fountain-ink.

The before and after test images were tele-shared by the patients which assisted in the diagnosis of scabies.

Images were shared by the patient, before and after performing the ink test:

Patient case 1: The patient in the scenario presented is a 24-year-old female complaining of itching (Figure 1a and 1b).

Patient case 2: Patient was a 4-year-old male with the complaint of itching and lesion in the palm of the hand (Figure 2a and 2b).

Patient case 3: Patient was a 1-year-old girl with skin lesions, was irritable and had disturbed sleep (Figure 3a and 3b).

RESULTS

Patients were able to perform the BIT at home by themselves and send the pre- and post-images to the clinician within 24 hours, to aid in diagnosis during pandemic time. These were analyzed and treatment was advised accordingly.

We were able to effectively follow-up with the patient on tele-basis and ensure proper compliance to the treatment suggested

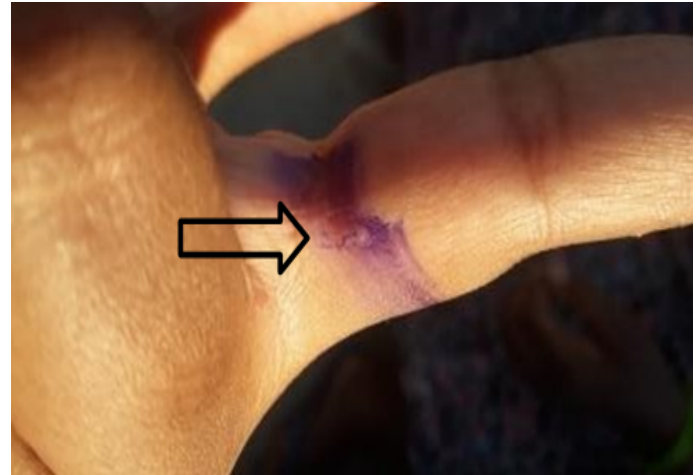


Figure 1b: The patient in the scenario presented is a 24-year-old female complaining of itching (After performing Ink Test).



Figure 2a: Patient was a 4-year-old male with the complaint of itching and lesion in the palm of the hand (Before performing Ink Test).

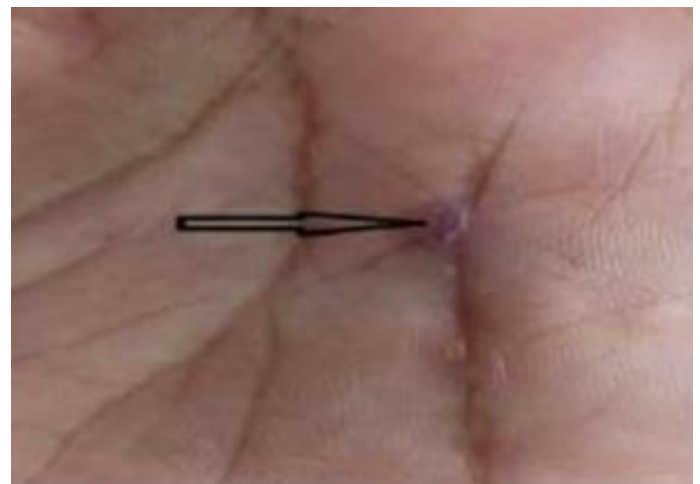


Figure 2b: Patient was a 4-year-old male with the complaint of itching and lesion in the palm of the hand (After performing Ink Test).

This test is non-invasive, easy to perform, gives useful additional information, and is cheap. It is advisable to be used more frequently by all concerned. In the pandemic era, this becomes a supportive diagnostic tool for the patient to test himself from within the comfort of his/her home.

It can be encouraged to use the BIT test on a routine basis as well.

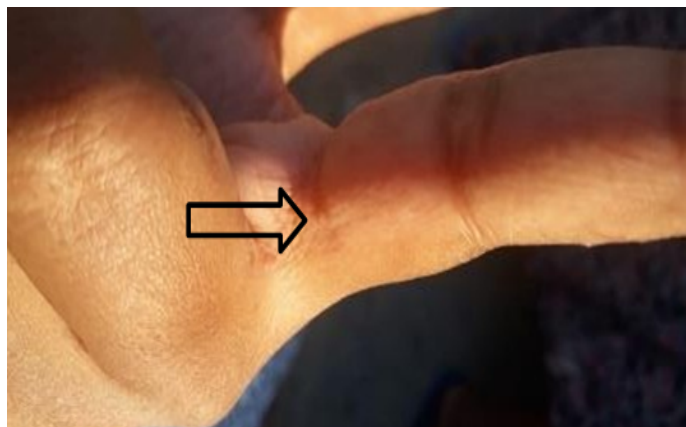


Figure 1a: An MRI of the brain revealing a left parieto-occipital mass with surrounding edema, adjacent to the midline.



Figure 3a: Patient was a 1-year-old girl with skin lesions, was irritable and had disturbed sleep (Before performing Ink Test).

CONCLUSION

In our experience we have seen that BIT has assisted us to some extent in arriving at the diagnosis of scabies from the comfort of the patient's home. The additional value of BIT test helps in repeated follow-up in a seamless manner without exposing the patient or the doctor. It also can be leveraged by the doctor in an OPD set-up as well.



Figure 3b: Patient was a 1-year-old girl with skin lesions, was irritable and had disturbed sleep (After performing Ink Test).

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