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Albendazole in the treatment of uncomplicated strongyloidiasis by using the agar plate method

Weerayutt Daenseekaew M.D. [1]
Vichit Pipitgool M.Sc.[1]
Paiboon Sithithaworn Ph.D.[1]
Sirima Kitvatanachai M.Sc.[1]

[1] Department of Parasitology,
Faculty of Medicine,
Khon Kaen University

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วีรยุทธ แดนสีแก้ว พ.บ. [1]
วิชิต พิพิธกุล ว.ทม.
ไพบูลย์ สิทธิถาวร Ph.D.
สิริมา กิจวัฒนชัย ว.ทม.

[1] ภาควิชาปรสิตวิทยา
คณะแพทยศาสตร์
มหาวิทยาลัยขอนแก่น

บทคัดย่อ

การตรวจวินิจฉัยโรคพยาธิ *Strongyloides stercoralis* จากอุจจาระของผู้ป่วยด้วยวิธี Agar Plate Method เป็นวิธีที่เชื่อว่าได้ผลดีกว่าวิธีอื่น คณะผู้วิจัยได้ทำการตรวจอุจจาระของชาวบ้าน 331 ราย ในจังหวัดขอนแก่นด้วยวิธีดังกล่าว พบว่ามีอัตราการเป็นโรค 24.77 % (82 ราย) ผู้ป่วยเหล่านี้ได้รับการรักษาด้วยยา Albendazole ในขนาด 400 มิลลิกรัม รับประทานวันละครั้งติดต่อกันเป็นเวลา 3 วัน มีเพียง 51 ราย ที่ส่งอุจจาระตรวจอีกครั้งหลังจากรับประทานยา 14 วัน ในจำนวนนี้ตรวจไม่พบพยาธิ 38 ราย คิดเป็นอัตราการหาย 74.51 % การศึกษาครั้งนี้แสดงให้เห็นว่าการเป็นโรคพยาธิ *S.stercoralis* ในชาวบ้านของจังหวัดขอนแก่นยังคงสูง และยา Albendazole ในขนาดดังกล่าวรักษาได้ผลดี

Abstract

The agar plate method is a new and highly sensitive technique for diagnosis strongyloidiasis. We detected strongyloidiasis from 331 villagers in Khon Kaen province by using this technique. There were 82 cases (24.77%) positive for *Strongyloides stercoralis*. They were administered albendazole 400 mg orally once a day for 3 consecutive days. Only 51 cases submitted stools for re-examination two weeks after treatment. There were 38 cases cured (74.51%). This study showed that strongyloidiasis is still a high cause of infection in Khon Kaen and the dosage of 400 mg orally once a day for 3 consecutive days of albendazole showed effective treatment.

Introduction

Strongyloides stercoralis is still one of the most prevalent parasitic nematodes in the tropics and subtropics[1]. The parasite produces a chronic but usually asymtomatic infection in humans. However, the infection can be activated to produce hyperinfective strongyloidiasis in patients who have been under various immunosuppressed conditions especially by the administration of steroids[1,2].

The benzimidazole compound, thiabendazole, has been the prime agent for the therapy of strongyloidiasis since its introduction in 1963 [3]. Nevertheless, this drug has significant toxicity[4] and is not always effective in either normal or immunosuppressed patients with strongyloidiasis[5]. Consequently many new drugs have been introduced and albendazole is one of them. It is also a benzimidazole derivative -5-(propylthio)-2-carbomethoxy-aminobenzimidazole[6] which has been shown to be an effective treatment for strongyloidiasis[7,8,9]. There has been attempt to use albendazole in treatment of uncomplicated strongyloidiasis at the dosage of 200 mg twice a day for 3 consecutive days[9] but the regimen to give 400 mg once a day for 3 consecutive days has not been performed.

The agar plate method is a new technique with a high detection rate for human strongyloidiasis and it was proven to be more sensitive than other conventional techniques[10,11,12,13].

The objective of the present study was the assessment of the efficacy of albendazole at the dosage of 400 mg once a day for 3 consecutive days in the treatment of uncomplicated strongyloidiasis with pre and post treatment diagnosed by using the agar plate method.

Materials and methods

Study area

The Nong Yaplong and Bueng Sawang villages, located 120 km west and 20 km east of Khon Kaen city respectively, were studied during January to May 1995.

Patients

Nearly all the people in two villages underwent stool examinations. All specimens were examined by using the agar plate method [10,11,12,13]. Only adults who were diagnosed strongyloidiasis and did not have underlying diseases were enrolled in the study. They were administered albendazole (Zentel^{R}) 400 mg orally once a day for 3 consecutive days. Two weeks after treatment the stools were collected and re-examined for post treatment. The absence of *S. stercoralis* larva after treatment was taken to indicate a cure rate which is described as a percentage.

The Agar Plate Method [10,11,12,13]

Briefly, the agar plate media for bacteriological examination was autoclaved and a small amount of the media (10 ml or less) was then distributed to each sterilized dish (9 cm in diameter). About 4 grams stool sample was placed at the center of the plate and incubated at room temperature (26-33° C) for 2-5 days.

The process of assessment was : all plates were screened under a dissecting microscope (X40).

Positive signs such as an actual worm, sine-curve like furrow left by crawling larvae and characteristically aligned bacterial colonies were noted. Ten percent formalin solution was poured onto each plate until the agar surface was soaked. The formalin was transferred into a test tube and the sediment was examined by dropping on a glass slide and observed under high magnification (X400) to identify the worms.

Result

Three hundred and thirty-one villagers were enrolled in this study. There were 82 cases positive for *S. stercoralis*, thus the overall the prevalence rate of *S. stercoralis* infection in two villages was 24.77%. Among the infected individuals, the ratio of male to female was 1.6 :1.

We excluded 10 children from 82 cases. Only 51 cases submitted stools after administration of the drug. There were 38 cases negative for *S. stercoralis*, so the cure rate was 74.51%. None of the 51 cases had a significant side effect of the drug.

Discussion

The prevalence rate of *S. stercoralis* infection in this study in two villages in Khon Kaen was considerable (24.77%) when diagnosed by using the agar plate method for stool examination. It was higher than the last study of Jongsuksantigul *et al*[14] which found only 0.17 % (22 out of 12,705) in northeastern people in 1991-1992 by using Kato's thick smear. The discrepancy in prevalence rate clearly suggested that the agar plate method is more efficient for detection of *S. stercoralis* in human stools[10,11,12,13].

The cure rate of albendazole at the dosage of 400 mg orally once a day for 3 consecutive days in this study was 74.51 %. This result was similar to the study of Pungpak *et al*[9] at the dosage of 400 mg in two divided doses daily for 3 consecutive days when their result was 73% by using the simple smear and the formalin-ether concentration method of Ritchie. All cases in this study did not have an underlying disease and they did not have significant side effects of the drug. Therefore, we may use albendazole at the dosage of 400 mg orally once a day for 3 consecutive days in the treatment of uncomplicated strongyloidiasis.

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