Ineffectiveness of Praziquantel Treatment for Human Sparganosis (A Case Report)

Jong-Yil Chai, Jae-Ran Yu, Soon-Hyung Lee, Suk-II Kim* and Seung-Yull Cho*

Department of Parasitology, College of Medicine, Seoul National University, Seoul 110-460, Department of Parasitology*, College of Medicine, Chung-Ang University, Seoul 156-756, Korea

Abstract—A male Korean farmer, who had received excisional operation on subcutaneous masses due to sparganosis, showed reappearance of subcutaneous masses at other sites. He was given praziquantel orally at the dose of 75 mg/kg/day for 5 days and again after one month. However, the masses did not regress and the patient complained of discomfort for the next 4 months. Finally the masses were excised and 3 actively moving spargana were recovered. In this case of human sparganosis with multiple lesions, praziquantel was not effective.

Key words: Human sparganosis, Praziquantel, Subcutaneous mass

INTRODUCTION

Praziquantel is a broad-spectrum anthelmintic against various trematode and cestode infections. It causes rapid contraction of worms and extensive vacuolization of their tegument and/or parenchymal layer which results in their death (Andrews et al. 1983). This drug is especially useful for its therapeutic effect on dermal and cerebral cysticercosis caused by the metacestode of Taenia solium (Rim et al. 1982).

In sparganosis, another larval cestode infection in human tissues (Chi et al. 1980), however, surgical removal is so far the only effective therapy. No chemotherapeutic trial has been reported successful (Moulinier et al. 1982). We also report here a clinical experience of unsuccessful treatment of human sparganosis with praziquantel.

CASE DESCRIPTION

The patient, a 55-year-old male farmer residing in Yongin-gun, Kyeonggi-do (Province), visited a local clinic in December 1984 because of several painful masses on his lower abdominal wall and right axillary area. Besides pain and itching at the lesions, the patient complained of severe fatigue. He said he had eaten raw snakes during the past 20 years. Sparganosis was suspected and excisional operation was done on the masses. From the excised masses 3 living spargana were recovered. Hence, this patient was thought to be completely cured.

Three to 4 months after surgery, however, the patient complained of reappearance of 3 thumbsized masses on the left flank and right axilla. He visited Outpatient Department of Seoul National University Hospital (SNUH). He was seen in consultation by the Department of Parasitology, SNU for the feasibility of chemotherapy. Serological test by micro-ELISA (enzyme-linked immunosorbent assay) for sparganum-specific antibody (Kim et al. 1984) revealed a high serum antibody level of absorbance (abs.) 1.06 (positive criterion: abs. 0.22).

The patient was treated with praziquantel for his disease. He was dosed with 75 mg/kg (in 3 divided doses) for 5 days, and again after one
month. During 4 months of follow-up observation, the masses did not regress significantly, although they became a little softer to palpation. He continuously complained of unrelenting pain and occasional itching sensation around the masses. At 4 months post treatment serum antibody titer in micro-ELISA for sparganosis was abs. 1.35, which was not a decreased level. Finally the masses were surgically removed. Each mass contained a live sparganum (Fig. 1) of which motility was significant.

**DISCUSSION**

The present trial of praziquantel treatment in a case of human sparganosis with multiple lesions resulted in failure. Most sparganosis patients are infected with a single worm and less than 30% of patients have multiple infections (Cho et al. 1975). Therefore, this rare case with multiple lesions was suitable for the drug evaluation.

A similar result was reported in a human case of proliferative sparganosis, a fulminating systemic disease caused by branching spargana (Moulinier et al. 1982). They used mebendazole and praziquantel alternately, but reported unsatisfactory results with both drugs. In experimental mice, administration of praziquantel was found ineffective for the treatment of sparganosis (Lee et al. 1986).

An interesting finding in vitro was that the spargana incubated in solutions containing 0.1–100 μg/ml praziquantel were immobilized and severely destroyed especially at their neck portions, looking as if the whole worm was dead and disintegrating (Lee et al. 1986). However, they (Lee et al. 1988) successfully infected mice with scolecites of the damaged spargana. The spargana were completely regenerated to reveal scolex, neck and body in experimental mice.

The failure of praziquantel treatment for sparganosis may have been due to inadequate dosage or bioavailability of the drug. It is known that the therapeutic dosage of praziquantel for the treatment of tissue parasites should be generally much higher than those for intestinal ones (Andrews et al. 1983; Lee and Chai 1985). For example, as much as 500–750 mg/kg in total dose is required for muscular or cerebral cysticercosis, while only 10–15 mg/kg single dose is highly effective for intestinal trematode or cestode infections (Andrews et al. 1983). In the present case, though two courses of treatment (at 1 month interval) each with 375 mg/kg dose were tried, the result was poor. It seems worthwhile to investigate whether even higher doses can bring about a successful result.

The resistance of sparganum to praziquantel is hard to explain. It may be of similar nature to those shown by other helminths, namely nematodes, trematodes such as Fasciola hepatica, and larval cestode such as hydatid cyst (Andrews et al. 1983). It would be interesting to investigate any similarity in the tegumental or muscular structures. Thick tegument may interfere with drug absorption, as in sparganum, hydatid and Fasciola, that are refractory to praziquantel.

Anyway, recent findings of relatively frequent cerebral involvement by sparganum (Chang et al. 1987) stress a necessity of searching for effective drugs for this disease.

**REFERENCES**

Cho SY, Bae J, Seo BS, Lee SH. Some aspects of human sparganosis in Korea. Korean J. Parasit. 1975,


Lee SH, Chai JY, Hong ST, Sohn WM. Survival in mice of damaged spargana by praziquantel, 1988 (To be published).


= 국문초록 =

인체 스파르가눔증에 대한 프라지판텔 치료 실험(1 증례 보고)

서울대학교 의과대학 기생충학과 및 중앙대학교 의과대학 기생충학과

채동일・유재란・이순형・김석영・조승열

경기도 용인군에 거주하는 55세 남자 환자가 1984년 8월부터 약 1년간의 피하낭중 제거술을 받은 바 스파르가눔(sparganum) 종료가 탑재되었음이 확인되었다. 그러나 수술 후 3-4개월에 좌측 하리와 두드람이 부근에서 약 2주가량 만한 종괴 3개를 다시 발견하였다. 이 때 스파르가눔 종괴에 대한 항체가(ELISA활성도는 1.06으로 나타나 스파르가눔증의 채종로 영향되었다. 프라지판텔 만에 의한 치료가능성을 행하라고 하루 75 mg/kg 용량을 3분량하여 5일간 총 375 mg/kg를 경구투여하였다. 또 같은 용량으로 치료를 1개월후 한 번 더 반복하였다.

치료후 4개월 동안, 종괴는 출전상 다소 부드러워졌으나 완화는 계속 통증과 가려움증은 호소 하였으며 항체가도 1.33로서 전혀 감소되지 않았다. 다시 수술을 시행한 바 중괴 3개에서 살아있 는 스파르가눔 3마리가 확인되었다. 이상의 결과는 인체 스파르가눔증 치료에 있어서 프라지판텔이 유용하다고 할만한 결과를 나타내었다.