EPIDEMIOLOGY AND SOCIO-ECONOMIC IMPLICATIONS OF DRACUNCUL1ASIS IN ELEVEN RURAL COMMUNITIES OF DISTRICT BANNU (PAKISTAN)

Pages with reference to book, From 233 To 238

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Abstract

Dracunculiasis has been prevalent in some of the rural areas of southern part of Bannu District where the main source of drinking water is reservoired rain water. A survey of eleven villages in this area was conducted. Their total populatron was about 24,000. The majority of inhabitants were farmers (60% -90%) with low income, poor education and primitive means of communication. The disease was prevalent in summer season (May to August). The total number of recorded fresh cases was 232 while 5095 cases were recorded as healed Old Cases. Only two patients were reported to have died of the disease. The male: female ratio was 3:1. The method of treatment was reported to be the use of indigenous drugs which included application of herbs, burnt camel bones and antibiotics. The disease in its active stage was very disabling and did produce economic loss to the families by disabling the male earning members (JPMA 36 : 233, 1986).

INTRODUCTION

Dracunculiasis is caused by Dracunculas medinensis, it still afflicts millions of rural villagers in India and Pakistan and in a broad band of.African countries from Mauritania and Sanegal in the West through Mali, Niger, Boorkina Fasso (formerly Upper Volta), Ivory coast, Ghana, Togo, Nigeria, Cameroon and Chad to Sudan, Uganda and Ethiopia. Fewer than five percent of the cases are routinely reported.[1]
The adult female parasite measures 750-1200mm in length with a diameter of about 1.25 mm and the male is of shorter size on an average it is 25mm long. This parasith resides in connective tissues of man and other vertebrates just under the skin. It can migrate from one site to the other in the infested person. The life cycle of this parasite starts with the development of young worms within the body of the female parasite. As soon as the young receives sufficient maturity for independent life, they burrow a hole into the skin of host through which a portion of worm uterus protrudes out (Figure 1).

Figure 1. Protruding worm through a burrow in the skin.

When the infested host skin comes in contact with water, myriads of young worms pass from uterus to water. The larvae of this parasite are approximately 0.6mm in length. They can freely swim around and are likely to be eaten by fresh water cyclops. In the cyclops the Guinea worm undergoes one or two molts and becomes infective in 10-20 days time. The final host may be man, dog, cat or other wild mammals, who get the infection by ingesting cyclops in drinking water. In these mammals the larvae

leave the cyclops and penetrate the intestinal wall. Then they migrate to connective tissues where it takes about one year to mature. After fertilization the male parasite dies and is absorbed by the host tissues. The female parasite becomes gravid and migrates to the skin, where it produces small ulcers. This parasitism in its definite host does not show any symptom untill the sore develops[2].

A few hours before, the worm reaches the surface of skin, there develops some local erythema and tenderness over the head. There may be severe local allergic reactions including generalized pruritus, urticaria, nausea, vomiting and diarrhoea, however, the local reactions are not important. The patient complains of sharp pain at a site corresponding to the head of the worm, where a papule develops. After a few days the area becomes indurated, the central region is raised and vesicle forms and ruptures. On contact with water, from this ulcer escapes milky fluid, containing active larvae. The local lesion heals in about weeks time, provided there is no secondary infection.[3]

In view of the economic losses inflicted by this infection and its medical significance the present study was conducted to work out the incidence rates on the basis of sex, age, profession and economic status, record the salient features of the illness and its complications, and to report the type of treatments rendered by locals.

The result of this study would highlight the problem of dracunculiasis in District Bannu and would also stress the need for operation of short range and long range plans to remedy the malady in afflicted areas.

MATERIALS AND METHODS

A survey for dracunculiasis infestation in eleven villages of District Bannu having approximate total population of 24000 was carried out. Village Asghar Khel with maximum number, of fresh cases was selected for the detailed studies (Figure 2).

Figure 2. Map showing Dracunculiasis infested villages in District Bannu.

The population of this village was 2400, mostly comprising of farmers. A team of three doctors undertook the study. Only naked eye examination was done and history was taken on a proforma specifically designed for the study. Thirty-four (34) randomly selected cases were studied in detail.

RESULTS & DISCUSSION

Epidemiology

The survey showed that the disease was prevalent in those villages where rain-water stored in step-in concrete reservoirs was used exclusively or mostly from the middle of May to the middle of September (range April to October). The patients were mostly farmers and disease was more common among males as compared to females. As mentioned earlier, the Asghar Khel was selected for the detailed studies because it was having maximum number of fresh cases. The majority of sufferers in this village were farmers having an average monthly per capita income of Rs.l 10/-. Their source of water supply was exclusively step-in rain-water concrete reservoirs. The nearest medical institution to provide health cover was basic health unit Shahbaz Khel at four miles distance. Two hundred cases were recorded to be suffering from fresh lesions while 1200 cases were recorded as healed. Two of the healed cases developed permanent disability (Figure 3).

Figure 3. Arophy of limb disability.

Of the 34 most recent cases, 24 were males showing male predominance. In 25 cases, the duration of the disease was from one to three months (average 2 months). The infection was wide spread affecting persons ranging between 6-60 years. Only one death due to this infection could be recorded in the present study.

The typical symptoms like fever and urticariaoccurred in 23 out of 25 cases, while vomiting was recorded in 13 cases out of 25 cases. The blisters ranged from 1-9 with an average of 2 blisters per patient. From each blister the anterior end of the worm bearing the gravid uterus was either visible or it emerged within few days. In 96% cases the blisters erupted on the lower limbs mostly legs or feet. In case of three patients blisters emerged on the upper limb and the trunk. Seven patients reported complete threading out of the worm. In two cases incision was necessary. Another twenty eight patients had a history of previous attack and their average duration of ifiness was 65 days. Thirty-two (32) healed patients reported disability during the active lesion period because of the painful limbs. Twenty-two (22) patients developed complications viz., 12 cases developed abscesses and ten developed cellulitis (Table I).

TABLE

Sl No.	Name of Village	Population	Percentage of Education Elementary, School & Above	Source of Water Supply	No. of fresh Cases	Male/ Female ratio of incidence	No. of Healed Cases	No. of cases having Permanent Deformity	Methods of Treatment
1	2	3	4	5	6	7	8	9	10
1.	Umer Titer Khel	1000	15%	a. 25% b. 75%	5	5:2	300	1	Local Herbs/ antibiotics
2.	Asghar Khel	2400	10%	a. 100%	200	2:1	1200	2	Local herbs, burnt Camel bones, Wheat flour & antibiotics
3.	Faqir Nilla	500	5%	a. 100%	3	2:1	30	1	Wheat flour & antibiotics.
4.	Sarga Khero khel	1000	8%	a. 100%	10	3:1	40	1	Antibiotics
5.	Chuwar Khel	3000	7%	a. 20% b. 80%	1	1:1	400 1	5	Local herbs, Cattle dung & roots.
6.	Khero Khel Pakka	5000	10%	a. 90% b. 10%	NIL	3:1	2000	NIL	Local herbs Cattle dung
7.	Goraka Said Khel	300	7%	a. 100%	NIL	1:0	25	NIL	Local herbs.
8.	Tabi Murad	2000	5%	a. 20% b. 80%	NIL	3:1	100	3	Cattle dung, Local method of surgical treatment
9.	Ghazni Khel	2500	20%	a. 80% b. 20%	1	4:1	300	NIL	Sacred stones from holy tombs, Tebs., Septren.
10.	Tajori	6000	12%	a. 80%	NIL	3:1	500	5	Local herbs, Cattle dung, local method of surgery
11.	Goraka Dilasa Khan	250	2%	a. 100%	12	3:2	200	1	Local herbs, inj: streptopenicillin
				a. Tube Well b. Rain Water Concrete Reservoirs					

TREATMENT

Thirty patients used indigenous methods of treatment including local application of herbs, wheat flour, burnt camel bones and scorpion bite to the guinea worms. Some patients used antibiotics like injections of streptopeniciffin and tablets of co-trimaxazole. None of the patients reported to a qualified doctor for

treatment of the infection. The period of disability ranged from two weeks to four months (disability means, inability to perform professional duties), average period of disability was about two months. No permanent disability could be recorded among the studied cases; although two persons amongst the relatives of the patients had permanent disability of the lower limbs caused by some previous infection (Figure 3). In case of patients who resorted to medical cure, the expenses per patient ranged between Rs. 200/- to Rs.2000/- Twenty-six(26) out of 34 cases had incurred such an expenditure. The remaining cases could not afford this medical bifi, thus resorted to indigenous methods of treatment involving no cost.

ECONOMICAL & SOCIAL ASPECTS

More than 5000 (20% of 24000) total studied population had either suffered from dracunculiasis in the past or were presently suffering from the disease. Majority of them were farmers and had low income. As the disease was prevalent during summer season, which was the time for harvesting and collection of agriculture crops, the disability caused huge loss of man work hours hence caused loss in farmers' annual income. Due to poor means of communication and lack of education, the infested families did not care for proper medical treatment and resorted to non specific remedies which resulted in prolonged illness and un-necessary expenditure. Depending upon the severity of the disability the guinea worm patients had to be looked after by other members of their families. This lead to additional loss of man-hours which further eroded the family earnings.

ROLE OF COMMUNITY IN THE CONTROL OF DISEAS

Preventive Measures (A)

i) Provision of clean drinking water by tube wells. The disease can be completely eradicated if 100% population is supplied with piped drinking water and filling up of the step wells. USSR eliminated dracunculiasis from their residual endemic foci in their southern zone in 1930's (Hopkins, 1984). It could be seen from the report under discussion that at village Khero Khel, where 90% of the drinking water was from tube wells and the remaining 10% from the rain-water ponds, the situation of the disease was much less aggravated. In this village the supply of tube-well water reduced the number of fresh cases which had dropped to nil as compared to 2000 old cases. Similar was the case with village Goraks Said Khel where no fresh case could be recorded.

ii) Till such time that tube well water is not available, the following measures could be adopted for the control of dracunculiasis:

a) a hand pump or a bucket with ropes can be used for collection of water from the reservoirs.

b) Patients with active lesions should not be allowed to step into water reservoirs.

c) The reservoirs could be disinfected by addition of bleaching powder.

d) The water could be sterilized by boiling or filteration.

(B) Curative Measures

Effective treatment is possible by early diagnosis, specific drug and antibiotic therapy for secondary infection. A few cases may need surgery.

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