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# *Phthirus pubis* infestation

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# *Phthirus pubis* infestation

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New patient registrations in the 200 or so special clinics in England and Wales have increased from 94,747 in 1954 to 197,065 in 1968.

During this 15-year period lymphogranuloma venereum and chancroid have ceased to be public health problems and syphilis has been well controlled, but the other sexually transmissible conditions for which statistics are available, namely gonorrhoea and non-gonococcal urethritis, have risen from 17,536 and 13,279 in 1954 to 44,810 and 35,493 respectively in 1968.

Demographic data are scanty or not available for other sexually transmissible diseases, such as trichomoniasis, genital warts, candidiasis, scabies, and pubic lice infestation.

To clarify the impression that the last of these is more common than formerly and is steadily increasing, a retrospective study was undertaken.

### Material

The case notes of 10,243 patients attending the special clinics in Sheffield throughout the year 1954 and the years 1964 to 1968 inclusive were searched, and 225 cases of crab louse infestation were found.

### Incidence

Table I shows a marked rise in incidence between 1954 and 1968. The basic incidence and the percentage incidence in the clinic population reveal that the increase, year by year in recent years, is not relative but

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TABLE I *Incidence of Phthirus pubis infestation*

Year	New patient registrations			Cases of infestation			Percentage incidence of total
	Male	Female	Total	Male	Female	Total	
1954	571	169	740	6	—	6	0.8
1964	1,050	592	1,642	8	10	18	1.1
1965	1,078	603	1,681	24	13	37	2.2
1966	1,295	656	1,951	25	17	42	2.1
1967	1,346	773	2,119	39	16	55	2.6
1968	1,355	755	2,110	47	20	67	3.2
Total	6,695	3,548	10,243	149	76	225	

real. Some 2.4 per cent. of the men and 2.2 per cent. of the women have been found to be infested in the last 5 years.

### Marital status

Table II shows that the condition occurs predominantly in the unmarried.

TABLE II *Marital status in Phthirus pubis infestation*

Year	Single		Married		Separated, divorced, and widowed	
	Male	Female	Male	Female	Male	Female
1954	4	—	2	—	—	—
1964	2	6	3	2	3	2
1965	14	9	9	3	1	1
1966	18	14	5	2	2	1
1967	30	11	6	1	3	4
1968	31	15	14	5	2	—
Total	99	55	39	13	11	8

### Age

Table III (opposite) shows that in the 15 to 19-year age group the incidence is higher in females. The sex distribution is reversed in the 20 to 24-year-olds and in those aged 25 and over.

### Race

All 76 affected females were born in the United Kingdom. Of the 149 affected males, eight (5.3 per cent.) were immigrants (Pakistani 4, Adenese 2, West Indian 1, and West Africa 1).

TABLE III Age distribution in *Phthirus pubis* infestation

Year	14 to 19 years		20 to 24 years		25 plus	
	Male	Female	Male	Female	Male	Female
1954	—	—	3	—	3	—
1964	—	6	3	3	5	1
1965	10	10	8	2	6	1
1966	11	9	8	7	6	1
1967	9	11	19	5	11	—
1968	8	14	22	4	17	2
Total	38	50	63	21	48	5

### Presenting complaint

In 76 cases (33 per cent.) the complaint was unrelated to infestation. Of the others, 61 presented with a story that they had seen 'crabs', 'lice', 'V.D. lice', or 'insects'; forty complained of pubic irritation; eight of 'itch and crabs'; and four of 'spots'; 36 attended without symptoms but requesting a 'check-up'.

### Incubation period

Attempts to estimate the time between exposure and the onset of symptoms proved frustrating for a variety of reasons, particularly multiple exposures and the asymptomatic state of many patients. Only in 33 cases, including some in which the diagnosis was made other than at the initial visit, could anything even approaching an estimate of the incubation period be made. This was found to average 30 days.

### Co-existent sexually transmissible disease

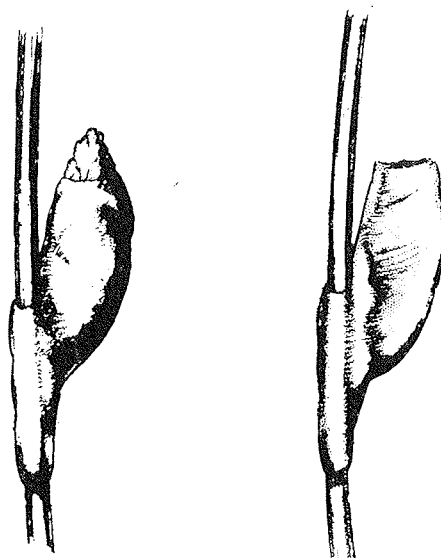
105 other sexually transmissible conditions were found in the 225 infested patients: syphilis 1; gonorrhoea 64; non-gonococcal urethritis 7; trichomoniasis 17; candidiasis 3; genital warts 6; scabies 7.

Only 85 patients were involved in these 105 conditions. Multiple diagnoses were only marginally more common in females.

### Life cycle of *Phthirus pubis*

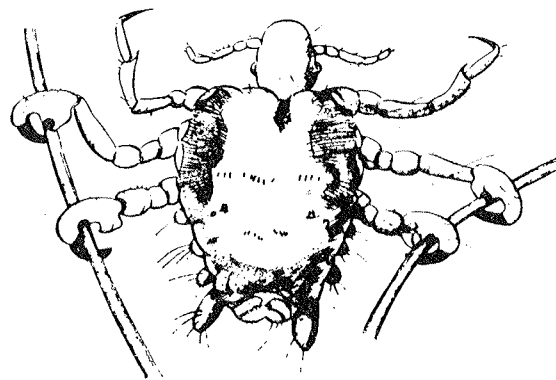
Lice having humans as their host belong to the order Anáplura, of which the family Pediculidae has two genera, *Pediculus humanus* and *Phthirus pubis*. The first of these genera has two forms, the head louse and the body louse. The genus *Phthirus* consists solely of *Phthirus pubis*.

The adult female lays three eggs per day to an average of 26. The individual egg or 'nit' is dark brown in colour, opalescent, and smaller than that of the body louse. It has a hard, chitinous covering and is attached to the base of a single hair by a mass of cement (Fig. 1). The egg displays a convex cap pierced by air pores.

FIG. 1a Egg of *Phthirus pubis*, showing capFIG. 1b Egg of *Phthirus pubis*, without cap after hatching

After an incubation period of 7 to 8 days the larva emerges to undergo three moults over a total of 13 to 17 days and so to attain its adult form. The life span of the adult crab louse is believed to be less than a month.

As the synonym 'crab' suggests, *P. pubis* is overall broader than it is long (Fig. 2). Its colour is dark grey to brown. Its fore limbs are poorly developed compared with those of the body louse. The male is more active than the female but on the whole crab lice move little, from several millimetres to 15 centimetres per day. The sex ratio of a population is believed to be, male:female = 40:60. Coitus takes place with each louse grasping two hairs with both pairs of hind legs and with the male upturned ventral to the female. Egg laying begins after 1 to 2 days.

FIG. 2 *Phthirus pubis* (adult female)

Apart from the pubic hair, *P. pubis* infestation is frequently extended to the hair around the anus and that on the abdomen and thighs. It may occasionally be found in the axillae and, in children, on the eyelashes. The distribution is believed to be related to hair density. Pubic hairs are more widely spaced than those elsewhere. Their 2 mm. spacing matches the hind leg span of the pubic louse which moves by the four hind legs clinging to two hairs.

Feeding is an almost continuous process, the insect anchoring its mouthpiece to the skin and sucking blood at frequent intervals. This near continuous feeding may well explain why the crab louse lives less than 20 hours when away from the host. Some louse bites show as discrete, round, slaty-grey or bluish spots. The colouring of these so-called maculae caeruleae is believed to be due to secretion from the reniform salivary glands but the chemical substance involved has not been identified.

### Diagnosis

Larval and adult forms are readily recognizable with the naked eye and this was the basis of diagnosis in most of the cases found by us. Frequently both adult 'crabs' and 'nits' were seen. In doubtful cases diagnosis was made by microscopical identification of the nits.

### Treatment

Two forms of treatment are in use, dicophane and gammexane.

The more popular is dicophane, that is dichlorodiphenyl trichlorethane, or more simply, DDT. This substance is only very slightly soluble in water. Its ovicidal action is so very mild as to be doubtful, but it is lethal to larval and adult forms of lice even in minute concentrations. It is believed to be the residual effectiveness of such concentrations, remaining after washing, which ensures complete cure, any emerging larval forms being killed immediately on hatching. Dicophane is absorbed by the parasite to diffuse in the fatty substance of the nervous system and cause death by paralysis. DDT is available as a 10 per cent. powder or as a 2 per cent. emulsion. The BP preparation used in Sheffield is made up as follows:

Dicophane	2 g.
Emulsifying wax	4 g.
Xylene, of commerce	15 ml.
Citronella oil	0.5 ml.
Water	to 100 ml.

The xylene gives a high degree of 'wetting' to the emulsion so that spread of the dicophane is even when drying occurs. The emulsion is applied and rubbed in with the fingers to the hair of the whole area from the level of the umbilicus to just above the

knees. It is left to dry and remain, without washing, for 3 days. If the patient does bath within this period the application should be renewed.

The real problem is posed by the nits, with their impenetrable covering, hard cement, and incubation period of 7 to 8 days. In earlier years the emulsion was left for only 24 hours. The 3-day regime now in use gives 100 per cent. cure rate as shown by repeated follow-up examinations of patients in this series.

The need to see and, where necessary to treat, the sex contact(s) is an essential part of the routine.

Gammexane (Gamma benzene Hexachloride) is a highly effective alternative form of delousing. It is usually prescribed as the National Formulary emulsion. It is insoluble in water and acts precisely like dicophane. The recommended routine is identical.

We have not recommended shaving; to be adequate this would have to include removal of the perineal, peri-anal, and thigh hairs and this is by no means an easy or practicable task. Furthermore, the application of medicaments after shaving frequently causes irritation and folliculitis and the shaved areas are uncomfortable and may perpetuate symptoms and induce anxiety.

### Discussion

There is no doubt that the growing demands on special clinic services reflect an increasing amount of casual and promiscuous sexual activity.

The rising incidence of *P. pubis* infestation, the male: female ratio of patients, and their marital status closely parallel those found in gonorrhoea. The most striking parallel, however, is the age distribution of those affected. As in gonorrhoea the condition is commoner in females than in males aged 15 to 19 years. As in gonorrhoea also a sex reversal in distribution is exhibited in those aged 20 to 24 years and 25 and over.

The high incidence of venereal and other sexually transmissible conditions in those with 'crabs', together with the foregoing, goes a long way to emphasize sexual transmissibility as the predominant mode of dissemination of infestation.

The noteworthy exception to this evidence is the low incidence of pubic lice infestation in immigrant patients. Over the 5 years 1964 to 1968 inclusive, non-whites formed 51 per cent. of our male patients with gonorrhoea, but only 5.3 per cent. of the men with crabs were coloured. There may be several reasons for this disparity. The state of personal hygiene of coloured patients is on average higher than that of indigenous patients, although the difference grows less with the years. Mohammedans augment high standards of cleanliness by regular shaving of the

pubis and axillae and they usually exhort their regular consorts to do the same.

The life cycle of the pubic louse suggests that the hatching of eggs may be expected to continue for a week after the commencement of treatment. Nevertheless the 3-day treatment regime proved adequate and there was no indication to repeat, routinely, the application of DDT emulsion on the seventh day as some have recommended (Busvine, 1966). It would appear that the traces of DDT remaining on the skin or absorbed by the hair are sufficient to deal with any emerging larvae. The high 'wetting' properties of the emulsion may also ensure penetration of the nit air pores and so arrest maturation.

No evidence was found to suggest that the pubic louse is developing resistance to DDT.

#### Summary and conclusions

The rapidly rising number of new patient registrations has led us to a consideration of the contribution made in our area by *Phthirus pubis* infestation.

The increasing incidence of the condition is not only relative but absolute.

That the commonest, if not the sole method of dissemination is human sexual activity, is emphasized by the findings. Noteworthy are the sex distribution, marital status, and age of those affected. A high proportion of the patients were found to be suffering from some other sexually transmissible disease. The findings parallel those familiar in gonorrhoea with the one exception that crab lice are relatively rare in coloured patients.

The life cycle of the crab louse and delousing routines are considered. Although the louse incubation

period is 7 to 8 days, a 3-day regime of treatment with DDT emulsion has been found satisfactory.

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#### References

- BUSVINE, J. R. (1966) 'Insects and Hygiene', 2nd ed. Methuen, London.  
 BUXTON, P. A. (1947) 'The Louse', 2nd ed. Arnold, London.  
 MINISTRY OF HEALTH (1968) 'On the State of the Public Health: Annual Report of the Chief Medical Officer for 1967'. H.M.S.O., London (*Brit. J. vener. Dis.*, 1969, 45, 67).

#### Infestation par *Phthirus pubis*

##### SOMMAIRE

L'augmentation rapide du nombre de nouveaux consultants nous a conduit à considérer l'infestation à *Phthirus pubis* dans notre région. L'augmentation de l'incidence de cette infestation ne fut pas seulement relative mais absolue.

Les résultats montrent que la dissémination de la parasitose la plus commune, sinon la seule, est l'activité sexuelle. Il est intéressant de remarquer la distribution des cas selon le sexe, l'état conjugal et l'âge. Une forte proportion de malades présentait également quelque autre maladie transmissible par contact sexuel. Cette constatation est parallèle à ce que l'on voit dans la gonococcie, avec l'exception que la parasitose est relativement rare chez les malades colorés.

On examine le cycle de vie du parasite et les méthodes pratiques de déparasitage. Quoique l'incubation soit de 7 à 8 jours, un traitement de 3 jours par une émulsion de DDT s'est montrée satisfaisante.