istic of an intradural tumour, which was worse on lying down, could be walked off, and was aggravated by coughing and sneezing. The diligent examiner may find unilateral weakness of the abdominal muscles and diminution of the abdominal reflex in these cases.

Patients with diabetes are known to suffer abdominal pains from thoracic radiculopathy[3] but the onset of back pain in these patients should always suggest an epidural abscess until proved otherwise. The presentation may be subacute, as in case 1, with no objective neurological signs. Waiting for such signs to evolve may result in disastrous cord infarction. Children are another group of patients in whom recurrent abdominal pains may be the initial symptom of a spinal cord tumour and be misdiagnosed as abdominal migraine or abdominal epilepsy.[4] The well known difficulties of examining children should never prevent a neurological examination in atypical abdominal pain.

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Communicable Diseases

Plague

Prepared by the Public Health Laboratory Service Communicable Disease Surveillance Centre

There have been three worldwide pandemics of plague. The first occurred in the sixth century; the second began in the fourteenth century and during the ensuing 300 years killed millions of people in Europe, and the first attempt at quarantine began in Venice in 1377.[1] The third pandemic began in China in the 1860s and reached Hong Kong by 1894. It was at that time that the epidemiological features of the disease first began to be elucidated, and the causative organism *Yersinia pestis* (now called *Y pseudotuberculosis* ssp *pestis*) was identified simultaneously by Yersin and Kitasato.[2 3] Since then the spread of the disease has waned owing both to a natural decline and to more efficient control measures based on a scientific explanation of transmission.

Plague is one of the diseases notifiable to the World Health Organisation. Areas with such cases may be designated as infected, and restrictions may be enforced on the movements of people in and out of these areas.

Worldwide occurrence

At present plague is known to occur naturally in rodents in parts of the United States, southern Africa, south eastern Russia, central Asia, and South America. In the past decade countries in other areas—for example, Vietnam[1]—have reported cases of the disease in man; these episodes are continuations of endemic disease present since the third pandemic.

Wild (sylvatic) plague occurs in wild rodents of different types depending on the locality. In the United States ground squirrels and prairie dogs are the main reservoir, while marmots are important in central Asia, and rodents of the family Gerbillinae are important in south eastern Russia and southern Africa.[2] Direct spread may occur from wild rodents or their fleas to hunters and others in close contact with the animals. If there is an epidemic (an epizootic) in the wild rodent population then the disease may spill over into the domestic animal population or to certain wild animals which live close to man. Transmission to domestic animals in rural environments may occur even when only a few wild animals are affected—an enzootic phase.

Various rodents have been implicated in the spread of the disease from wild rodents to man, and these include the semidomesticated brown rat and bandicoots, notably in India. Domestic rodents such as mice and rats (especially *Rattus rattus* and *Mastomys natalensis*) may either be infected directly from the fleas of wild rodents or from semidomesticated rodents. Transmission from one rodent population to another takes place when the infected animal dies and its infected fleas leave it and migrate and infect another animal. A number of species of fleas and other arthropods have been implicated in this transmission, but the most important is *Xenopsylla cheopis*. An infected flea becomes "blocked" and thereupon regurgitates the plague bacilli into the creature being bitten. *Xenopsylla* appears to be particularly likely to become blocked in this way.[3] It can be seen that spillage from wild enzootics or epizootics into semidomesticated rodents would be of importance only when the latter populations are large and increasing and human contact with them is possible. This is the classic setting for epidemics of the disease in man.

Man may become infected by direct contact with infected rodents or fleas. Bubonic plague is manifested by a lymphadenitis in nodes draining the site of a flea bite or other contact and may progress to a septicaemic form. Secondary spread to the lungs, pneumonic plague, may result in man to man transmission and cases of primary pneumonic disease.

Pattern since 1970

The smallest number of cases (191) of human plague notified to the World Health Organisation since 1970 was reported in 1981, but the trend has not been continuously downward (see table). Madagascar, a country with a natural rodent focus, was the only nation in Africa consistently reporting cases since 1970. There were, however, outbreaks of the disease in Namibia, which reported 102 cases in 1974; in Kenya outbreaks occurred in 1978 and 1979; and in 1979 Sudan reported 226 suspect cases.[5-7]

In the American region up to 1976 Brazil reported large numbers of cases, and a substantial number were reported again

Epidemiological features of plague from 1970 to 1981

Year	Africa		Americas		Asia		World total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1970	27	6	326	19	4109	82	4462	107
1971	20	9	216	10	4186	165	4422	184
1972	128	40	297	28	1408	66	1833	134
1973	50	4	185	3	443	39	678	46
1974	182	26	321	8	2252	130	2755	164
1975	144	36	521	9	811	52	1476	97
1976	96	30	146	9	1266	60	1508	99
1977	141	30	48	11	1258	26	1447	67
1978	202	12	97	5	485	14	784	31
1979	471	12	23	2	387	16	881	30
1980	80	20	142	7	283	29	505	56
1981	50	12	128	12	13	—	191	24

in 1980 and 1981. Peru reported a small number in the later 1970s. Since the early 1970s between 10 and 20 reports have been received every year from the United States, where in 1981 out of 13 reports bubonic plague was diagnosed in five cases, septicaemic plague in five, and two patients had septicaemia with confirmed spread to the lungs. These people were infected through the bites of fleas in five cases, through skinning wild animals in two others, and through the bite of a sick domestic cat in another. Cases reported from the State of New Mexico in 1977[8] were thought to have been associated with probable epizootics in rodents. In one patient there was direct contact with rabbits infected with plague, and the second patient slept with a cat infested by fleas. Three other patients had insect bites but no memory of contact with rodents, and four had had contact with dogs or cats which were later found to have diagnostic titres to *Y pestis*. Experimental evidence indicates that while cats often will suffer severely from the infection dogs may have a non-fatal disease and may carry infected fleas after recovery.[9]

In Asia Burma reported many cases in the early 1970s, but totals fell to one only in 1981. In Vietnam after a peak of 5500 cases in 1967 and over 4000 cases in 1970 numbers reported fell to between 500-600 in the mid-1970s and to 11 cases in 1981.

The variations in reported case fatality rates between regions may reflect availability of treatment (though four of the 13 patients with plague in the United States in 1981 died), the inclusion in the reports of large numbers of suspect cases, limited reporting of deaths, and natural variations in virulence of the organism.

Control

There is a continuing risk of spread to man in areas where the disease is present in rodents. In countries with such areas, reporting of human cases and preventive measures such as rodent control, education in storage and disposal of food, avoidance of contact with rodents, and the treatment of domestic cats and dogs for flea infestation should be encouraged. In Britain regulations exist to ensure regular deratting of ships docking at ports.

Treatment with streptomycin, tetracycline, or chloramphenicol is highly effective in all forms of human disease if recognised early. Recent experience in Vietnam was that the mortality rate in diagnosed and treated cases was 1-5%, while in the untreated population it was extremely high.[4]

There is a killed vaccine against plague which can reduce the incidence and severity of the disease resulting from contact with fleas, but the degree of protection against spread by the airborne route is unknown. Immunisation is recommended for laboratory and field personnel working with organisms resistant to antimicrobials, people engaged in experiments with aerosols, and people engaged in field operations in areas where plague is enzootic and preventing exposure is not possible. Selective immunisation should be considered for laboratory personnel regularly working with the causative organism or infected rodents, workers living in rural areas with enzootic or epidemic plague where avoidance is difficult, and people whose occupation brings them into regular contact with wild rodents or rabbits in an enzootic area. The vaccine is given intramuscularly in three spaced doses with boosters, if necessary, every six to 12 months.[10] Immunisation with plague vaccine reduces the incidence and severity of the disease resulting from the bite of infected fleas, but since the degree of protection afforded against primary pneumonic infection is unknown, those accidentally exposed in the laboratory to aerosols of the organism should be given antimicrobial treatment regardless of immunisation history.

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Can either allergy to antibiotics or chronic nasal sinusitis precipitate mild manic or mild depressive episodes in patients with cyclothymic temperaments?

The precipitating factors of manic or depressive episodes in patients with cyclothymic personalities are not known. Although minor everyday incidents, or even more serious events such as infection or allergy, may appear to cause a particular episode, it is important to avoid the pitfall of attributing causality to one event merely because it precedes another, which would have occurred anyway. Slater and Roth emphasised this point further by describing a number of "treatments" (including incidentally the removal of septic foci in the sinuses) all of which will provide a rapid "cure" of a depressive phase, provided that the mood change is already fated to take place.[1]—A H GHODSE, consultant psychiatrist, London.

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What precautions should a holidaymaker in Spain take if he is bitten by a dog?

Immediately flush the wound area thoroughly with plenty of soap and water. Then seek medical advice. If possible, identify the dog (or cat) and inform the animal's owner or the police of the biting incident. If the dog (or cat) has been identified then its state of health should be observed for the next 10 days. If necessary the dog should be examined by a veterinary surgeon and vaccination certificates checked. Whether or not antirabies treatment is started immediately depends on several factors. Each possible exposure has to be assessed individually, and the opinion of a specialist at the nearest rabies vaccination centre should be obtained. Although the risk of rabies infection is low, Spain is not designated a rabies free country, and if the dog (or cat) cannot be traced and kept under surveillance the exposed person should try to obtain antirabies treatment.—SYLVIA GARDINER, Central Public Health Laboratory, London.