ovary as other likely sites. Biopsy of the lesion was indicated despite failure of cytology and mammography to confirm carcinoma, because routine palpation of abdominal viscera and operative cholangiogram had shown no abnormality. Failure to detect the breast lesion on physical examination at the time of admission for cholecystectomy was probably due to the diffuse nature of the lesion but emphasises the importance of such examination.

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Respiratory syncytial virus pneumonia

We report a case of respiratory syncytial virus (RSV) pneumonia in a 50 year old prison inmate. He had been given oral dihydrocodeine for two to three days because of back pain. He developed an itchy punctate rash over the buttocks, posterior thighs, and face on the day of admission to hospital. He was ill, dehydrated, had pinpoint pupils and could not give an adequate history. Shortly after admission he had a respiratory arrest after which he was ventilated. He had renal failure; urea of 35.1 mmol/l, creatinine of 498 μ mol/l, sodium of 142 mmol/l and potassium of 6.9 mmol/l. He also had impaired liver function. The prothrombin time was 50" (control 14"), total bilirubin 50 μ mol/l (normal <20 μ mol/l), alanine transaminase 99 IU/l (normal <35 IU/l), aspartate transaminase 451 IU/l (normal <30 IU/l), lactic dehydrogenase 1441 IU/l (normal 60-225 IU/l), γ -glutamyl transferase 10 IU/l (normal <60 IU/l), albumin 13 g/l (normal 35-45 g/l) and total protein 28 g/l (normal

63-80 g/l). He was given intravenous fluids, ventilation, and appropriate cardiac support but did not improve and had a cardiac arrest and died seven hours after admission. The concentration of dihydrocodeine in blood taken at necropsy was 2.2 mg/l, well above 1.5 mg/l when severe toxicity is to be expected.

The virologist was contacted because the post mortem technician cut himself with a scalpel. Because the patient had been a prison inmate HIV infection was a possibility. The patient was not thought to be homosexual, drug abuse had been denied, and he did not come from an area with a high prevalence of AIDS. The anti-HIV test (Abbott recombinant ELISA test) and HBsAg test (Abbott RIA test) were negative—that is, he did not seem to be infected with either HIV or hepatitis B virus.

At necropsy the rash on the face seemed to be vesicular and examination of the lungs showed red hepatisation with pulmonary oedema. The liver and kidneys looked normal. To explore the possibility of varicella zoster virus infection the following samples were taken for virological examination: vesicle fluid; skin scrapings; and a swab from the vesicles, throat, and fresh lung. Varicella zoster virus infection was not confirmed. The results of electron microscopy, virus isolation, and an indirect immunofluorescence test with varicella zoster monoclonal antibody on epithelial cells and lung smears were all negative. IgM class antibody to varicella zoster (RIA test) was not detected in the patient's serum.

Respiratory syncytial virus was detected in lung tissue and both this and parainfluenza 3 virus (Para-3), were isolated from the throat swab. The impression smear made from peripheral lung showed that many cells were strongly positive for RSV antigens by immunofluorescence with our pool of monoclonal antibodies, although we failed to isolate the virus from the lung specimen in tissue culture. A panel of monoclonal antibodies to respiratory viruses has been collected at St George's Hospital and is used routinely on all respiratory tract specimens for indirect immunofluorescence on shed cells or tissue. The panel includes pools of monoclonal antibodies to RSV, Para-influenza 1, 2, and 3, mumps, measles, influenza A and B viruses, each of which was screened for cross reactivity for all the other viruses in the panel and checked for specificity by isolation of virus from immunofluorescence positive specimens. Both RSV and Para-3 isolated from the throat swab were detected in tissue culture by positive fluorescence of tissue culture cells

with the appropriate monoclonal antibody pools: no cytopathic effect was seen and there was no haemadsorption. In our experience this is a valid technique for isolating virus in tissue culture. We find that about half of the nasopharyngeal aspirates which contain either RSV or Para-3 immunofluorescence positive cells from the upper respiratory tract give positive isolation results in tissue culture by fluorescence alone, as above. The full details of this work will be published later.

RSV pneumonia is a very unusual finding in an adult. Death from RSV pneumonia has been reported in five severely immunocompromised adults.^{1,2} It is almost certain that RSV infection in an adult is not a primary infection but a reinfection, so there may have been a higher titre of neutralising antibody present in the homogenised lung than in the mucus and saliva of the throat swab which could explain why virus was not isolated from lung, yet infected cells were shown by immunofluorescence. In our patient an upper respiratory infection with RSV may have spread to the lower respiratory tracts as a consequence of progressive respiratory depression.

Oral dihydrocodeine had accumulated to a toxic level because it had been given in the presence of unsuspected renal failure and impaired liver function: it is known that it can cause severe narcosis in renal failure and that it is inactivated by glucuronidation in the liver. The death of our patient was the result of a combination of two factors: dihydrocodeine toxicity with narcosis and a haemorrhagic pneumonia due to RSV. It is clear that as new methods for the diagnosis of virus infection become available, the viral aetiology of sudden respiratory deaths in adults, as well as children, can and should be more thoroughly investigated as the fortuitous involvement of the virologist in this case proves.

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