Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

(Kenya, Ethiopia, and Sudan), 58 of 59 were subserotype B_1 or B_2. In Latin America, there appears to be greater variation in all leishmanial serotypes, reflecting the greater complexity of New World leishmanial taxonomy. Could these geographical differences in the distribution of leishmanial serotypes be related to the distribution of human BGAs? Since both the ABO and MN(T) systems are expressed by the leishmanias, the relation between leishmanial and human blood group serotypes is probably complex. If we consider, as a first approximation, only the ABO system, there appears to be a degree of correspondence with leishmanial serotypes. Thus, while a difference in frequency of leishmanial serotypes is evident in the Middle East when compared to East Africa, a concomitant reduction in the proportion of type A individuals resulting in a decrease in the ratio of A/B from approximately 2:1 in the Middle East to about 1.3:1 in East Africa is also seen.[16] Other factors such as minor human blood groups, distribution of insect vectors and animal reservoirs and other considerations must be taken into account when trying to explain differences in distribution of leishmanial serotypes. Perhaps only in certain areas of Latin America can a direct association between leishmanial and blood group serotypes be considered. The indigenous population is more than 90% type O, thus possessing both anti-A and anti-B antibodies. The leishmania isolated from this region show great variation in serotype and have been classified as A_1–A_6, A_1B_2–A_4B_2, and indeterminant B_x serotypes. Natives of the region are less severely affected by these leishmania than are an imported population (descendants of slaves brought from Africa), largely blood types A and B, who have destructive lesions.[17] Perhaps antibody pressure has been a factor in parsite variation and has forced each leishmania into its own ecological niche.

Human immune responses to leishmania

Marcus[11] expressed the possible interaction of a parasite antigen and host BGA as follows: "If the infectious agent possessed an A antigen, the anti-A antibody possessed by group O and B persons might contribute to host defence mechanisms; group A persons might be partially tolerant to the microorganisms and, consequently, exhibit an ineffective immune response". A similar phenomenon might aid in explaining a curious feature of antibody measurement in cutaneous leishmaniasis. *L. donovani* (type B_2) or *L. braziliensis* (type A_3B_2) may be used as antigen to detect antibodies against *L. tropica* (type A_1) by immunofluorescence, often with better results than with the homologous antigen.[18] These diagnostic studies did not take into account the ABO blood type of the patients. We would therefore expect that the serum of an infected person of B blood group would more easily detect by serology an A rather than a B leishmania, and vice versa.

Conclusion

The arguments presented to support the interaction of leishmanial and human blood group serotypes are far from rigorous. However, considered together they are intriguing and seem to warrant a search of immunochemical, clinical, ecological, and epidemiological data to confirm or negate the suggestion.

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INTERFERON ASSAY AS A DIAGNOSTIC TEST

SIR,—Interferon is found in the sera of certain patients with proved viral infections and may explain some of the general symptoms experienced. Its presence might also be exploited in diagnosis. Matthews and Lawrence[1] have shown that acute phase sera from confirmed cases of virus infection in hospital patients were often positive, whereas in bacterial infections they were negative. We have examined sera from 124 patients who had been thoroughly examined by virus isolation and serology: 69 children with febrile convulsions and a variety of associated symptoms such as pharyngitis;[2] 29 adults admitted to hospital during an influenza epidemic, tested for influenza virus and anti-influenza antibodies; and 26 adults with mild colds whose specimens were examined by inoculation of tissue cultures and organ cultures with electron microscopy.[3]

RESULTS OF INTERFERON TESTS

Organism isolated or antibody rise	Proportion with IF in serum*
Adenovirus	1/15
Influenza A virus	9/14 (*64%*)
Rhinovirus	0/11
Coronavirus	2/8
Parainfluenza virus	3/6
Enterovirus	2/6
Haemophilus spp.	4/4
Herpesvirus	0/2
Cytomegalovirus	1/1
Measles virus	1/1
Nil or normal flora	14/38 (*37%*)

*17 patients from whom more than one organism was isolated have been excluded. Interferon was detected in 9.

Sera were diluted 1:10 and added to cultures of V3 cells which were challenged with vesicular stomatitis virus.[1] The endpoint detected 1 reference unit 69/19 of human leucocyte interferon (IFNα).

Interferon was detected in 45% of the children with febrile convulsions, 34% of the adults with influenza, and 15% of the adults with colds. It was found in the sera of 19 of the 65 patients from whom one virus was isolated (table) and from 14 of the 38 in whom a staphylococcus was cultured from the throat or in whom no organisms were found. Interferon is not found in the sera of healthy persons by this technique.

The number of positive results seems to be related to the severity of the virus infection and also, possibly, to the type of infecting organism. Thus it was positive in half of the influenza and parainfluenza cases, in less than half of the enterovirus and coronavirus infections, and in hardly any of the adenovirus and rhinovirus infections. The test is usually negative in infections with hepatitis and herpesviruses and always negative in uninfected subjects.[1] The test was nevertheless positive in a substantial number of our patients whose illnesses resembled acute virus infections (such as febrile convulsions, acute gastroenteritis, and respiratory disease) but in whom tests for individual viruses were negative, so we believe the presence of interferon indicated that they had an otherwise unrecognised virus infection, although in some it may have been an infection with *Haemophilus* spp.

The numbers are still small, but indicate to us that tests for serum interferon may be a useful adjunct in detecting infection with viruses, particularly those producing acute and severe disease, and that they may be positive in cases in which thorough diagnostic tests

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are negative. This approach might be useful when specific antiviral treatments are available and when interferon can be detected rapidly by biological testing[4] or by radioimmunoassay using specific monoclonal antibody.[5]

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SINGLE DRUG OR MULTIPLE DRUG THERAPY FOR EPILEPSY?

SIR,—The observations of Dr Gannaway and Professor Mawer (Jan. 24, p. 217) who successfully transferred ten of eleven chronic epileptic patients from multiple to single drug therapy, accord with our own studies and support our view that there is much unnecessary polytherapy in the treatment of epilepsy.[1-3]

In forty patients followed up prospectively for a year before and after cautious reduction of polytherapy we achieved and maintained single drug therapy in 72%.[1] Amongst the latter an improvement in mental side effects occurred in 55% and, more surprisingly, seizure control actually improved in a similar proportion. The main reason for failure to reduce polytherapy was exacerbation of seizures during the difficult withdrawal phase. Further, seizure control in chronic patients is not as good as that which can be achieved with single drug treatment in new referrals with epilepsy.[2]

We have discussed in detail elsewhere[3] the reasons that have perpetuated the traditional approach to the treatment of seizures with polytherapy. These include the early age of onset of epilepsy, the poor prognosis of some seizure types, the long-term nature of treatment, the availability of so many different drugs, the poor quality of anticonvulsant trials, the lack of guidelines (other than toxicity) to the limits to drug therapy, and, especially, the tendency to exacerbation of attacks during drug withdrawal. Although there is remarkably little evidence that polytherapy is superior to single drug treatment the problems associated with the former approach are all too apparent, including a wide range of chronic toxic effects and drug interactions, and failure to evaluate the relative merits of individual drugs. Thee is also evidence that polytherapy actually exacerbates seizures in some patients.

The availability of blood anticonvulsant drug monitoring has significantly improved the modern pharmacological management of epilepsy.[4] It is now possible to achieve good control with single drug therapy in the great majority of new previously untreated patients, provided the drug is taken reliably.[2] In the event of failure of optimum monotherapy for any particular seizure type the benefits of an additional drug, although possible, are in our view still unproven. We doubt if there is any indication for adding a third or more drugs. The problems of chronic patients already on polytherapy are much more difficult to manage, but there is a strong case for rationalisation of therapy to two or even to one drug if possible. However, there are risks involved due to possible exacerbation during the hazardous withdrawal phase, especially in the more brain damaged patient. It is clearly easier to avoid than to reduce polytherapy and we would urge greater emphasis on the former.

Amongst many others two particular questions stand out in relation to the pharmacological treatment of epilepsy. What are the limits to the efficacy of drug therapy other than those imposed by toxicity? What is the mechanism of the exacerbation of seizures during drug withdrawal and how can the risks be minimised? These questions are at the heart of the problem of polytherapy in epilepsy. They require urgent investigation because there are great pressures on doctors to add more drugs in the face of continuing seizures, although the evidence of additional benefit is lacking.

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MOTOR NEURONE DISEASE IN LEATHER WORKERS

SIR,—A couple of years ago we noted, in the unpublished tables from the latest decennial supplement on occupational mortality that leather workers in England and Wales had high mortality for motor neurone disease in 1970–72. The observation was based on very few deaths so we went back to the raw data for the previous decennial supplement for 1959–63 to see if these supported our observation. The table below summarises our findings:

	Deaths to leather workers	
Period	*Observed*	*Expected*
1959–63	9	5·97
1970–72	7	2·73
Total	16	8·70
	p<0·01	

No clustering of cases was found when they were plotted according to last usual residence.

Our analysis is based on death certificate diagnosis. However, we are not aware of an association between leather work and motor neurone disease. Preliminary inquiries revealed that many years ago arsenic was widely used in tanning (pre-1914) as were, to a lesser extent, lead and cadmium based pigments; none of these are in common use nowadays.

We describe these observations now because of recent reports of polyneuropathy in Italian leather workers[1,2] suspected to be related to glue solvents. These subjects often had sensory involvement and significant slowing of motor conduction velocity.

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ISLET-CELL ANTIBODIES AND MUMPS

SIR,—Helmke et al.[3] have described islet cell antibodies (ICAs) in 14 out of 30 children with mumps. We have studied sera from twenty-five patients who had had mumps. These 1–8 week convalescence sera had raised mumps titres (complement fixation) varying from 1:48 to 1:512. The clinical conditions included mumps meningitis, mumps with medulloblastoma, and mumps with anaemia.

ICAs were sought by indirect fluorescence techniques for both IgG[4] and C3 fixing[5] antibodies. Two commercial antisera (Wellcome sheep antihuman and Miles-Yeda goat antihuman IgG fluorescein isothiocyanate [FITC] conjugates) were used for the IgG technique and Wellcome sheep antihuman C3 FITC conjugate was used for the C3 technique. These conjugates were used at a 1:15 dilution; the patients' sera were tested both neat and diluted 1:2 to eliminate possible prozone phenomena. Several pancreas substrates were used, each being human blood group O, Rh+ve obtained im-

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