

size the increasing number of reported deaths from misuse of propoxyphene, particularly when combined with other central nervous system depressants. This is especially important if the patients are known to be heavy users of alcohol or if they are using sedative or hypnotic drugs.

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Rapid diagnosis by electron microscopy of nonbacterial gastroenteritis in children

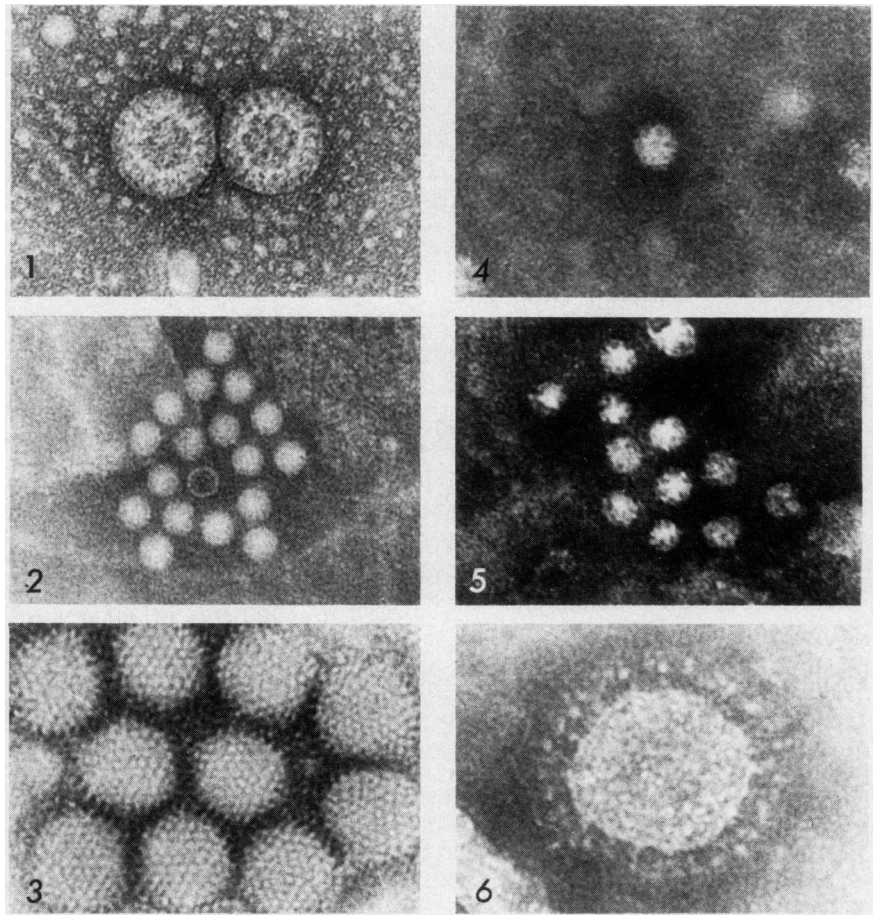
To the editor: The electron microscope has proved to be an invaluable instrument in virology. Revelation of the virus morphology by electron microscopy from tissue cultures, embryonated eggs or experimental animals inoculated with specimens from humans leads to the clinical diagnosis. This, however, is an indirect process that depends on the successful and time-consuming growth of the virus in a susceptible biologic system. However, direct examination of patients' specimens — eye, skin, genital, biopsy, autopsy, urine and stool — by electron microscopy has allowed establishment of the diagnosis within minutes if the concentration of the virus particles was sufficiently high. The laboratory services branch of the Ontario Ministry of Health, namely the central laboratories in Toronto and the regional public health laboratories in Windsor and Thunder Bay, provides rapid direct electron microscopic testing routinely, free of charge.

These laboratories examined a

total of 1233 stool specimens from patients with gastroenteritis between October 1978 and September 1979. Of the 1233 specimens 287 (23.3%) were positive for viruses (Table I). Most of the patients were infants and young children; however, samples from patients up to 12 years of age were not uncommon. The specimens were submitted by hospitals, clinics, private laboratories and practising physicians, and were often obtained with

the feces-collecting kits available upon request from each laboratory.

The virus that most often causes nonbacterial gastroenteritis is the rotavirus. Its appearance is distinctive in that it resembles a wheel with short spokes (Fig. 1). The incidence of infection with the rotavirus is seasonal, peaking in the winter and spring (Table I). This virus does not grow in conventional biologic systems. Different methods of detection were proposed, but



FIGS. 1 to 6—Rotavirus, enterovirus-like virus, adenovirus, calicivirus, astrovirus and coronavirus-like virus respectively ($\times 200\,000$).

Table I—Results of electron microscopy of 1233 stool specimens examined between October 1978 and September 1979

| Virus observed | No. (and %) of specimens | | | | | | | | | | | | Total (n=1233) |
|------------------|--------------------------|-------------|-------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|-------------|--------------|----------------|
| | Oct. (n=26) | Nov. (n=41) | Dec. (n=85) | Jan. (n=136) | Feb. (n=144) | Mar. (n=151) | Apr. (n=122) | May (n=128) | June (n=132) | July (n=119) | Aug. (n=97) | Sept. (n=52) | |
| Rotavirus | 0 | 5 | 11 | 27 | 26 | 32 | 27 | 11 | 14 | 2 | 2 | 1 | 158 |
| Enterovirus-like | 3 | 1 | 4 | 8 | 9 | 9 | 3 | 15 | 8 | 0 | 3 | 0 | 63 |
| Adenovirus | 0 | 3 | 2 | 13 | 4 | 5 | 5 | 7 | 6 | 1 | 5 | 5 | 56 |
| Calicivirus | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 7 |
| Astrovirus | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total | 5 (19.2) | 10 (24.4) | 19 (22.4) | 49 (36.0) | 40 (27.8) | 48 (31.8) | 35 (28.7) | 34 (26.6) | 28 (21.2) | 3 (2.5) | 10 (10.3) | 6 (11.5) | 287 (23.3) |

electron microscopy is currently the fastest and most widely used technique.

A total of 63 enterovirus-like viruses were identified during the study period. They appeared as small, spherical particles with a rough surface (Fig. 2). The typical seasonal peak in the incidence of enteroviruses, the summer and fall, was not observed (Table I). This could be attributed to the fact that only stools of patients with gastroenteritis were examined and not those of patients with meningitis or other syndromes caused by enteroviruses. Also, the number of specimens obtained during this period was low. Most of the viruses identified by electron microscopy failed to grow in tissue culture.

Adenovirus appears as a hexagonal particle with a typical arrangement of surface viral subunits that gives it a "studded" appearance (Fig. 3). The incidence of adenovirus infection was relatively evenly spread throughout the year (Table I). Attempts to propagate the virus from the stool specimens often failed.

Caliciviruses were previously found in cases of nonbacterial gastroenteritis. These are small particles whose surfaces have round hollows arranged in a Star of David pattern, the edges of the hollows forming the arms of the star (Fig. 4).

Astrovirus is a relatively rare cause of gastroenteritis. The particle's surface structure appears as a star with a white centre (Fig. 5), as opposed to the calicivirus, whose centre is always dark (Fig. 4).

In addition to the viruses we have described, fringed, spherical and pleomorphic coronavirus-like particles were often found (Fig. 6). Such particles have previously been seen in the stools of children with nonbacterial gastroenteritis.

Electron microscopy also revealed instances of double infections: combinations of rotaviruses and enteroviruses, and of rotaviruses and coronavirus-like virus particles were found in single stool specimens.

In our experience, stools submitted specifically for bacteriologic testing often yielded a viral infec-

tious agent when observed by electron microscopy.

The data we have presented illustrate that direct electron microscopy is of high diagnostic value and enables rapid identification of viruses as causative agents of nonbacterial gastroenteritis.

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Use of benzodiazepines

To the editor: As a psychiatrist in an emergency department I am concerned about the number of patients who request, or demand, benzodiazepine drugs, and present problems related to benzodiazepine use, abuse or withdrawal. Therefore, I was particularly interested in the comments about benzodiazepines by Drs. Moire S. Jacob and Edward M. Sellers (*Can Med Assoc J* 121: 717, 1979).

They may be correct that benzodiazepine drugs, when used at recommended doses for less than 2 to 4 weeks, are not commonly associated with physical dependence. However, many patients use these drugs at higher doses than recommended,¹ and most cannot easily stop taking them.² This problem leads many physicians to regard benzodiazepines as "once on, never off" drugs.³

Even when conventional doses are not exceeded, use of benzodiazepines for several weeks or months has been related to withdrawal syndromes after discontinuation. Both grand mal convulsions⁴ and withdrawal psychosis similar to delirium tremens⁵ have been reported. The real extent of these phenomena is unknown because the problems are likely those under-reported.⁶ The "minor abstinence syndromes", which consist of diffuse anxiousness and fearfulness with insomnia, anorexia, agitation, tremors, cramps and sweating,⁷⁻⁹ are especially apt to

go unrecognized because the symptoms are delayed in onset and mimic the anxiety for which the drugs were initially prescribed. My impression is that many patients continue using benzodiazepines long after the initial problem has passed because withdrawal is so difficult.

Perhaps because I see many casualties as a result of benzodiazepine therapy, I was dismayed to read that Drs. Jacob and Sellers advocate the use of benzodiazepines for the treatment of anxiety and insomnia in daily doses of up to 100 mg of chlordiazepoxide, 40 mg of diazepam or 45 mg of oxazepam. Furthermore, in view of their caveat that these drugs should be used for short-term treatment only, I was puzzled by their advice to prescribe them for chronic anxiety.

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To the editor: As is clearly indicated in our article, we are extremely concerned about the widespread use of benzodiazepines and have clearly proposed that physicians and patients should be much more circumspect in the use of drugs that are clearly associated with persistent use.