to the right, with eversion of stomach and large and small intestine (rarely of solid organs) and with no covering.

Embryologically both conditions probably result from a disturbance in the folding process of the body wall. Failure of formation of the lateral folds may result in simple exomphalos, whereas if the cephalic or caudal folds are implicated there may be ectopia cordis or ectopia vesicae in addition. Gastrochisis is probably a later occurrence, with rupture of a weak part of the anterior abdominal wall after the return of the midgut loop to the peritoneal cavity.

The clinical distinction between intrauterine ruptured exomphalos and gastrochisis is difficult except on the rare occasions when a clear strip of skin can be seen between umbilical cord and defect. Duhamel's concept of the conditions occurring at different points in development is supported by the fact that in exomphalos up to 75% of cases may have major associated anomalies whereas in true gastrochisis associated anomalies are rare. From a practical point of view the embryogenesis of the lesion is important only in that associated anomalies are potentially lethal and must be searched for; the exomphalos or gastrochisis, whatever its origin, must be reduced and repaired.

A limited number of cases are suitable for primary operative closure. These are cases of exomphalos with a small or moderate sized intact sac; the temptation to reduce the small one by clamping or twisting the umbilical cord must be resisted, since vitellintestinal remnants are often adherent and there is a risk of strangulation. In about one-third of cases of exomphalos with an intact membrane the abdominal wall defect is larger and the extra-abdominal viscera include part or all of the liver. Operative closure of such a defect, even with skin only, is impossible without causing respiratory embarrassment and obstruction of the inferior vena cava. Management in recent years has increasingly often been by painting the sac with a drying disinfectant solution such as 2% tincture of mercurchrome, 70% alcohol, or Zephrin tincture; this forms a scab under which epithelialization takes place, converting the exomphalos into a ventral hernia.

Up to one-third of cases of exomphalos are ruptured, and these are treated in the same way as gastrochisis—by primary closure if possible but failing that by the creation of a new "sac" with silastic sheeting. In the wide-necked lesion this silastic pouch behaves rather like the intact sac painted with disinfectant, separating after 10-14 days and leaving a slowly epithelializing surface; in the narrow-necked lesion the gut is returned to the abdominal cavity by a staged reduction of the size of the silastic pouch over the course of 7-10 days. Supportive therapy has also helped to improve results. In some cases of primary closure and indeed in some staged procedures assisted ventilation may be required to overcome moderately increased abdominal pressure. Delay of even several weeks in the establishment of normal alimentary canal function may occur, particularly in cases of intrauterine rupture where the bowel wall is grossly thickened—total intravenous feeding may tide the baby over this period.

Survival rates in the difficult cases have more than doubled, but the overall mortality remains high. Further improvement in results probably depends more on general management than on the development of elaborate surgical techniques. Treatment, even though it may be non-operative, should be carried out in a surgical unit equipped to manage the neonate—the conservatively treated sac may rupture and associated anomalies may demand urgent surgical correction.

Initial care in babies with exomphalos and gastrochisis is mainly concerned with maintenance of the airway and avoidance of hypothermia; a nasogastric tube, draining freely, will keep the stomach empty, and the excessive heat loss from the large amount of exposed gut in the ruptured exomphalos or gastrochisis can be prevented by enclosing the eviscerated gut, or the whole trunk and limbs of the baby, in a sterile plastic bag. These simple precautions ensure that the baby will travel well to the specialist centre.

5 Duhamel, B., Archives of Disease in Childhood, 1963, 38, 142.

**Dangerous Aerosols**

Adequate humidity is known to promote normal ciliary function, clear sticky mucus, and help certain patients with airway obstruction. In Britain we still use inhalations of steam (with or without menthol or other flavouring), but water aerosols are used quite extensively in North America and to a lesser extent in continental Europe. One common type is the so-called cold-mist vapouriser—really an aerosol generator using a spinning impeller to drive sheets of fluid against a corrugated surface, where they are sheared into fine droplets expelled as a mist. Room air is drawn into the generating device and mixes with the small amount of the mist that remains inside the apparatus. The room air may contain particles including fungal spores, and in many cases slimy deposits may form inside the generating devices.

A recent report by Solomon described exacerbations of asthma occurring during the use of contaminated vapourisers. Two asthmatic patients at first attributed their symptoms to the moisture, but high levels of fungus particles were then found in the emissions of both their vapourisers. This prompted Solomon to study the vapourisers being used by other patients. He made careful collections with an Anderson sampler before and during the operation of cold mist vapourisers in 24 homes, including those of the original two patients. The results showed that the concentrations of yeasts and fungal spores and hyphae could increase up to 250-fold during operation of the vapourisers. This compared with a no more than two-fold increase when a simple electric fan was used in the room to dislodge the organisms in the natural environment. The vapourisers themselves were therefore implicated as the source of the contaminating particles, which included such genera as *Rhodotorula*, *Sporobolomyces*, *Penicillium*, and *Aspergillus*. These last three have certainly been shown to produce asthma in man, while Solomon's two patients gave typical wheal and flare reactions following prick tests with extracts of *Rhodotorula*. Furthermore, both showed significant falls in the forced expiratory volume in one second after inhalation challenge tests.

Previous studies have shown that pathogenic bacteria can contaminate these and other vapour generators, but fungal causing allergic reactions have not been described before. We have had problems in Britain with sterilization of respirators used for positive pressure respiration, and some of these are now being used to put bronchodilators such as salbutamol into aerosol form. Fungi capable of provoking asthma could lurk...
in improperly maintained apparatus, especially in the nebuling chamber. In Britain vaporisers are not yet in widespread use, in the home, without medical and nursing supervision; nor is the “inhalation therapist” a distinct entity as in North America. This recent report points out that there might be hazards from any trend in that direction.

1 Solomon, W. R., Journal of Allergy and Clinical Immunology, 1974, 54, 222.

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**Eyes, Joints, and Intestines**

Inflammatory lesions of the eye occur in a number of rheumatic conditions, of which the best known are Still's disease, ankylosing spondylitis, and Reiter's syndrome. The most common is anterior uveitis, but conjunctivitis, keratitis, and episcleritis may also be found, especially in Reiter's syndrome and rheumatoid arthritis. In addition there may be a posterior uveitis, particularly with the collagen diseases—though it is doubtful whether division of uveitis into two types is either desirable or possible: sarcoidosis for example commonly causes iridocyclitis but retinal lesions are being recognized with increasing frequency.

Ulcervative colitis may also be accompanied by anterior uveitis, the incidence in two large series being 2% and 3.6%, compared with 0.1% in the general population. An association with regional enteritis is less well known, but a recent survey of 322 patients in Leeds showed 21 (6.3%) to have eye complaints, of which anterior uveitis in 8 (2.4%) was the commonest; among others were episcleritis, keratitis, conjunctivitis, and macular haemorrhage. Patients with continuous bowel disease were 20 times and those with intermittent symptoms 10 times as likely to develop eye trouble as those in remission, but the site and extent of the bowel lesion did not play any part. The eye lesions rapidly resolved in 2 patients once their enteritis was brought under control with medical treatment; the other 19 patients were treated surgically, but in 5 this did not prevent further eye trouble.

An association between chronic inflammatory bowel disease and arthropathy, particularly ankylosing spondylitis, is well recognized—it occurs in approximately 6% of patients and there is a close correlation between arthropathy and anterior uveitis in these circumstances. In one series of 144 patients with ulcerative colitis, 13 of the 25 with ankylosing spondylitis also had uveitis, and nearly half the Leeds patients with eye disease had some form of arthropathy, though the nature of the joint disease was not specified. Moreover, other "systemic" complications such as iron deficiency anaemia and skin and mouth lesions were common in the latter group.

It is difficult to explain the occurrence of uveitis or indeed any other systemic manifestations in chronic inflammatory bowel disease; Wright et al. suggested that they might result from release of bacterial antigens from the damaged bowel. The known association with arthropathy and the occurrence of uveitis in rheumatic syndromes and sarcoidosis have prompted the search for a common link. It is known that the majority of patients with ankylosing spondylitis possess the histocompatibility antigen, HL-A 27 (W27), and the same antigen is frequently present in Reiter's syndrome and in patients who develop arthropathy after gonococcal, dysenteric, and yersinia infections. So far no convincing relationship between HL-A 27 and either ulcerative colitis or Crohn's disease alone has been established, but 13 out of 18 patients with ulcerative colitis and ankylosing spondylitis were positive for HL-A 27. In contrast, however, only 3 of 21 patients with sacroileitis or ankylosing spondylitis accompanying regional enteritis were positive, though this figure may be falsely low because of inclusion of "possible" cases, and other series should be tested. In another study of 100 patients with anterior uveitis no fewer than 27 out of 30 patients with associated rheumatic syndromes were positive for HL-A 27, while of the other 70 patients in whom there were no associated disorders only 27 were positive. Ten of the latter were among the 13 women in the series who were under 35, so perhaps this variety of uveitis is the female counterpart of Reiter's syndrome.

Clearly there is a complex relationship between chronic inflammatory bowel disease, arthropathy, and uveitis. There is a need for further studies of patients showing various combinations of these features, with particular emphasis on accurate identification of the lesion and its site.

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**Plastic Patients**

Clinical teachers who want to demonstrate physical signs have to limit their choice of subjects to the patients currently available. This creates problems with signs that are either transient or relatively uncommon or that are associated with diseases which do not require admission to hospital. As a substitute for the real thing dermatologists and ophthalmologists can use photographs. Cardiologists have used gramophone records or tapes, and more recently a phonocardiograph and a manikin which allow simulation of much more complicated pathophysiological states. These give the results of appropriate laboratory investigations as well as permitting demonstration of the detection of physical signs. Denson and Abrahamson introduced "Sim 1" for use in the teaching of anaesthetics, and more recently Gordon has described an animated manikin which will simulate about 50 cardiovascular diseases. Its computer will provide an account of the clinical history as well as electrocardiographic, radiological, and haemodynamic information; data from physical examination may be gained by examining the model. The student can assess the general appearance of the model (pallor, cyanosis), arterial and venous pulsation, the cardiac impulse, auscultatory signs, the blood pressure, and fundal appearances.

Gordon points out that his model has many advantages— unlike real patients the manikin is never tired, worried, or abused, and instructive "patients" can be summoned at the