MEDICAL PRACTICE

Clinical Problems

Retinal Detachments

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Last year, 1970, was the 100th anniversary of Jules Gonin's birth, and it is some 50 years since he reported the first successful treatment of retinal detachment—an eye disease recognized many years previously following the introduction of the first ophthalmoscope by von Helmholtz in 1851. The Gonin Club was founded some 11 years ago to commemorate Gonin's pioneer work, and its meeting in Lausanne in September of last year was an appropriate tribute to the father of retinal surgery. Since Gonin's early successes progress has continued in the surgery of retinal detachment, albeit by increasingly complicated techniques, and in particular recent progress has been in the field of prophylaxis.

Definition

"Retinal detachment" is really a misnomer, as a cleavage occurs between the two primitive retinal layers, the inner sensory layer and the pigment epithelium. Nevertheless, the term is well established, and refers to such a separation, with the associated loss of function. A simple retinal detachment is virtually always associated with a hole or tear (or more than one) (Fig. 1) in the retina. After this, fluid accumulates under the sensory layer of the retina, giving rise to a detachment (Fig. 2). The retinal defect may also take the form of a meridional tear (Fig. 3), or of a disinsertion of the retina at the ora serrata (Fig. 4).

The retinal break may arise spontaneously, in association with degenerative changes within the tissue itself, as the result

of vitreoretinal adhesion and consequent traction on the retina, or following direct or indirect trauma. Retinal detachment may also occur secondarily in association with several systemic and local conditions, but they fall outside the scope of this article.

Presenting Features

The initial symptoms include flashes of light (photopsiae), which may occur, curiously, either in the quadrant of the field corresponding with the anatomical position of the tear, or, as one would reasonably expect, in the area of the field functionally related to its site. Photopsiae are the response of a light-sensitive tissue to local irritation. With these flashes, or as an initial symptom, considerable vitreous opacities may appear. These are the result of a vitreous haemorrhage, the blood leaking from a retinal vessel torn at the time when the retinal break occurs. Vitreous haemorrhage is described by the patient as black streaks rising up from the lower field, or sometimes as "seaweed floating in the field of vision." The importance of recognizing the meaning of the sudden appearance of such vitreous opacities cannot be over-emphasized, as early ophthalmic examination and treatment minimize the ultimate visual disability, and greatly shorten stay in hospital and convalescence.

The development of subretinal fluid results in a loss of function in the affected area of the visual field, and a shadow (usually beginning in one quadrant) extends to cover an increasing area of the field of vision. The extension of the subretinal fluid to the macular area is accompanied by a loss of visual acuity, and worsens the prognosis for the recovery of central vision. Visual acuity is also reduced when a superior balloon detachment becomes sufficiently deep to interrupt the visual axis, hiding the macula from direct observation.

It is important to realize that the second eye may also develop retinal detachment. Though various figures have been quoted, the chance of the fellow eye being affected is about

FIG. 1.—Types of retinal lesion which may give rise to a retinal detachment.

FIG. 2.—Upper temporal quadrant detachment with U-tear.

FIG. 3.—Meridional tear in the equatorial region in the lower temporal quadrant (left eye).

FIG. 4.—Disinsertion at the ora serrata in the lower temporal quadrant (right eye).

FIG. 5.—Application of cryo-probe at the margin of a retinal tear.

FIG. 6.—Light coagulator. (Kindly supplied by the Institute of Ophthalmology)

30% when a spontaneous detachment has occurred in the first eye.

Treatment

INDICATIONS

Consideration should be given to treating any eye in which a predisposing retinal lesion, and in particular a definite retinal break, is found, though opinion is divided on whether *all* such lesions should be treated. The risk of prophylactic treatment is small, and is certainly less than that of continued observation without treatment. Sufficient cases have now been observed to support this view, for a history of premoni-

tory symptoms has been followed at varying intervals by the development of a retinal detachment.

METHODS

The principle underlying treatment is to induce an adhesive choroidoretinal reaction around the break (Fig 5). This may be done by cryotherapy (cooling the area locally to about $-80^{\circ}\text{C}.$), surface diathermy, light coagulation (the use of a source of heat and light in conjunction with a specially designed ophthalmoscope (Figs 6 and 7)), or by laser therapy, or by a combination of these techniques.

With larger retinal breaks a small scleral indentation is achieved either by scleral surgery or by suturing an external "plomb"—usually of silicone rubber sponge (Figs 8 and 9)—to the scleral surface after the preliminary application of choroidoretinal reaction.

If a detachment has already occurred, and it does not settle down completely with a period of preoperative rest (in which event it can be treated as a flat tear), treatment is aimed at effecting choroidoretinal apposition either by a "volume-reducing" procedure, or by internal tamponnage. The former may be done by local plombage—as already described (Fig 8.)—or by using an encircling band made of silicone rubber or a natural material (for example, plantaris tendon or fascia lata) to

FIG. 7.—Application of light coagulation.

FIG. 8.—Application of radial or meridional "plomb."

FIG. 12.—Use of needle to introduce air or fluid into the vitreous cavity.

FIG. 9.—Retinal appearance of case treated by small radial plomb.

FIG. 10.—Encircling silicone rubber band.

FIG. 11.—Encircling silicone rubber band used in conjunction with meridional plombage.

produce a circumferential indentation of the globe (Fig 10). Plombage and encircling may be used in combination (Fig 11). Internal tamponade consists of increasing the contents of the vitreous cavity in an eye whose internal pressure has been reduced by the deliberate release of subretinal fluid through a scleral puncture (Fig 12). Air, saline, donor vitreous, a plasma substitute, or more rarely liquid silicone may be used for this purpose.

Postoperative Management

The postoperative treatment is often individual to the surgeon in charge of the patient, but as a general principle either double-padding or occluding glasses are used for a limited period, after which stenopaic slits and later dark glasses are worn. When the patient gets up depends to some extent on the site of the retinal tear, and when this is the lower half of the retina the patient is allowed up after 24 hours. In detachments of the upper half a longer period of rest in bed is generally advisable.

A return to normal activities depends on the patient's occupation, sedentary employment being much more accept-

able than heavy physical exertion. In the absence of other contraindications, a successfully treated patient should be able to resume his normal occupation and reasonable sporting activities within three months.

Prognosis

The prophylactic treatment of retinal detachment carries a high success rate. The results quoted vary when considering cases undertaken for curative treatment, but the proportion of successes is over 70%. Special centres which attract difficult and previously unsuccessfully treated cases still maintain a similar rate of success. The recovery of a satisfactory standard of visual acuity depends on several factors, including the duration of the detachment, the presence or absence of macular involvement, and the extent of the surgical treatment necessary to reposition the retina successfully.

Finally, it is important to reiterate the statement already made—that retinal detachment and the presence of predisposing retinal lesions constitute a bilateral problem in an appreciable proportion of cases.

Hospital Topics

A Review of Experience Operating a General Medical Intensive Care Unit

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Summary

From 18 months' experience of operating a four-bedded general medical intensive care unit a high staff-to-patient ratio was the most important factor in its success. Heavy capital spending does not appreciably reduce the importance of adequate numbers of trained staff, though patient-monitoring equipment can be useful and sometimes vital. As the scope for intensive care widens, the problems of clinical care become difficult, because no doctor is likely to be competent enough to provide for all categories of patients, and there is no intensive care equivalent of the general physician. Intensive care is likely to function best in a divisional specialist system of clinical care.

Introduction

In the past 10 years the practice of nursing acutely ill patients in specialized intensive care units has increased. This stems from the success such units have had in reducing mortality,

particularly after cardiac surgery and acute myocardial infarction. As a result many hospitals have provided, or are planning, such units. The rationale and, presumably, the success of intensive care units are based on their ability to concentrate nursing and medical expertise in one area, providing a high staff-to-patient ratio and allowing early detection of changes in a patient's condition and the provision of intensive nursing care.

Continuous monitoring of the electrocardiogram after acute myocardial infarction has shown that dysrhythmias may occur in about 85% of patients (Julian, Valentine, and Miller, 1964; Fluck *et al.*, 1967). Antiarrhythmic drugs, direct current cardioversion (Lown, Amarasingham, and Neuman, 1962), transvenous catheter pacemaking (Portal, Davies, Leatham, and Siddons, 1962), and external cardiac massage (Kouwenhoven, Jude, and Knickerbocker, 1960), have made the successful treatment of dysrhythmias possible, and recent authors have laid particular emphasis on early treatment of dysrhythmias (Killip and Kimball, 1967; Lown, Fakhro, Hood, and Thorn, 1967), and the coronary care unit as described by Day (1963) and by Brown, MacMillan, Forbath, Mel'Grano, and Scott (1963) has been developed. By contrast Hubner, Goldberg, and Lawson (1969) have shown that monitoring facilities in general wards without other features of an intensive care unit may not reduce the mortality after acute myocardial infarction. This paper draws attention to the advantages provided by a high staff-to-patient ratio and to the fact that the staff can be adequately trained to become expert.

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