Results. Platelet counts were done in 18 cases on alternate days, for a period of 10 to 14 days following admission to hospital. The results are shown in Table 1.

Platelet counts were found to fluctuate widely in individual cases. In only four cases was a significant reduction (below 100,000 per c.mm.) observed. In general, platelet counts followed the haemoglobin content closely. In other words, when an anaemia was present the thrombocytes were also reduced. In six cases the thrombocyte count was less than 150,000 per c.mm. at the time of admission to hospital.

COMMENT

The direct method of counting platelets, as already described, yields counts which are regularly lower than those obtained by some of the indirect methods (Todd and Sandford, 1943). Platelets are difficult to count owing to their property of agglutination and disintegration. Only very great variations in the count have clinical significance.

The results obtained in the present series do not support the contention, postulated by Drummond, that there is an invariable fall in the thrombocyte count in typhoid fever. In only four cases was a significant reduction (below 100,000 per c.mm.) observed. In one case the thrombocyte count was 90,000 per c.mm. shortly before the development of gastro-intestinal bleeding. This patient had also passed blood per rectum on the day before admission.

SACULATED INTERNAL PROLAPSE OF THE VITREOUS

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Herniation of the vitreous body into the anterior chamber of the eye is known as an internal prolapse. The localized, or sacculated form, following subluxation of the lens, is rare. Sykes and Dodson, who recently described one case, could find no other case reports in the English language and less than 20 cases of this kind reported since Siegfried's description in 1896.

The present writers have recently seen three examples of sacculated internal prolapse of the vitreous. All the patients were the victims of industrial accidents. While Wurdemann, in his 900-page treatise on *Injuries of the Eye*, omits all reference to the condition, the authors feel that this type of lesion must be commoner than the sparse reports would seem to indicate.

CASE REPORTS

1. An adult male was at work when a piece of steel four inches long entered the right orbit, above the eye. Slit-lamp examination revealed a mass of vitreous in the anterior chamber, coming from the nasal side and extending from 1 o'clock to 5 o'clock and nearly to the midline. There was a clear space between the cornea anteriorly and the vitreous mass. The surface of the vitreous mass was denser than the interior and had the appearance of a membrane. Some brown pigment was scattered on its surface. No displacement of the lens was detected clinically and there was no iridodonesis.

2. An adult male, while at work, ran his left eye against a machine. No abnormality could be detected on naked-eye examination of the anterior segment. With the slit-lamp a vitreous herniation was noted in the anterior chamber, coming from the nasal side of the lens. The prolapse was of an oily, semi-fluid consistency. No condensation of the surface layers was detected. The mass extended from 2 to 5 o'clock and did not reach the midline. The lens did not appear to be displaced and there was no iridodonesis.

3. An adult male alleged that while at work underground he was struck on the left eye by a piece of loose rock. Examination revealed two linear opacities in the anterior substance of the cornea with no evidence of corneal perforation. The iris was tremulous and there was a small posterior dislocation of the lower pole of the lens. At the 4 and 7 o'clock positions at the edge of the pupil were two vitreous prolapses. No condensation of the surface layers was detected. There was some free pigment floating in the anterior chamber. No radio-opaque foreign bodies of the eye could be demonstrated.
DISCUSSION

The three cases of vitreous prolapse described were the result of industrial accidents. Severe trauma was the cause of most of the cases described in the literature. A case which seemed to be of spontaneous origin was reported by Hesse. This was in a young boy whose eye was highly myopic and the seat of a retinal detachment.

In two of the cases here described the prolapse was on the nasal side, where the eye is well protected from many forms of direct trauma.

In all the cases it was difficult or impossible to make the diagnosis without examination by the slit-lamp microscope. This makes it possible that the condition is sometimes missed by observers who do not use this instrument.

Internal prolapse of the vitreous may be grouped in three main categories:
1. Following intra-capsular lens extraction.
2. Following discission of a cataract or after-cataract.
3. After subluxation of the lens.

In the first two cases displacement of the lens could not be detected by the writers. It is probable, however, that a small degree of displacement was present.

The appearance of the prolapse differed in these cases. In the first, a distinct surface membrane was noted. In the second and the third, the vitreous substance was much more fluid in consistency and had no limiting membrane. It is possible that the fluid form of prolapse arises from the primary vitreous in the region of Cloquet's canal.

The mechanism of the production of this type of vitreous prolapse has not been much discussed in the literature. It is evident that the appearance of vitreous in the anterior chamber, in cases of this nature, must be preceded by a solution in the continuity of the zonular ligament. Such a break could theoretically be produced by a force acting either in front of the ligament or behind it. This is illustrated in the two original techniques of intra-capsular extraction described by Smith.

In one of Smith's methods, pressure is applied with a blunt hook on the cornea, backwards and downwards, as though to insinuate the hook between the edge of the lens and the ciliary body. The ciliary body tends to be pushed down and back and the zonule is torn from its attachment to the lens. Here the operative force comes from the front of the zonule. A rather similar principle is seen in Kirby's technique for producing a subluxation of the lens before intracapsular lens extraction.

In Smith's other technique, pressure is exerted backward on the corneo-scleral margin with a blunt hook placed at 6 o'clock. This produces a forward protrusion of the vitreous at 12 o'clock and causes a tear in the zonule at this site. Harrington believes that in such cases rupture of the zonule is accomplished by the production, by external pressure, of a wedge of vitreous which is made to insert itself between the equator of the lens and the ciliary body. The immediate cause of the tear thus comes from behind.

The writers feel that the mechanics of zonular rupture illustrated in Smith's techniques give a clue to the method in which internal prolapse of the vitreous is produced.

SUMMARY

Three cases of internal saccular prolapse of the vitreous, following on industrial injuries to the eye, are described. Some features of the condition are discussed.

REFERENCES


LABORATORY DIAGNOSIS OF STEROID HORMONE DISEASES*

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With the discovery of adrenocorticotrophic hormone (A.C.T.H.), a protein hormone, and cortisone (Compound E of Kendall—17-hydroxy-11-dehydrocorticosterone), the importance of the endocrines in modern medicine has again been stressed. New vistas have been opened up not only for treatment, but also for the study of the biological mechanisms underlying physiology and disease. Workable and reliable techniques are being standardized for the quantitative evaluation of endocrine states. The chemical structures of the hormones with their metabolites are being studied intensively.

Insulin is a protein hormone as are also the hormones of the anterior pituitary and of the thyroid gland. The internal secretion of the posterior pituitary is polypeptide in nature, while the hormone of the adrenal medulla may be regarded as a protein derivative. The remaining known hormones, viz. those of the adrenal cortex and the gonads, are steroids and believed to be derived from cholesterol. Cholesterol is widely distributed throughout all living organisms. There is an important biochemical relationship not only between cholesterol and the steroid hormones, but also between other important biological substances such as bile acids, vitamin D, the strophanthus glycosides, digitalis glycosides, the cancer-producing hydrocarbons, and many other substances of biological interest. They are all built about a cyclo-pentano-perhydro-phenanthrene nucleus. The structural relation-

*The References will be published at the end of the concluding part of this paper.