valve. There was extensive peritonitis; and the peritoneum contained about three-quarters of a pint of purulent fluid, confined to the lower half of the cavity by adhesions of the great omentum.

After the patient's death, it was ascertained by inquiry from his friends, that he had been ill for three or four weeks with fever; and that, four days before admission, having already for several days been permitted to eat meat, he was told by his medical attendant that he might return to his employment as a labourer. He had been working for a few hours when he was suddenly seized with the acute pain above referred to, and was obliged to return home.

The case illustrates the extreme caution necessary during convalescence from typhoid fever.

Original Communications.

ON THE DIFFERENT FORMS OF HÆMORRHAGE WITHIN THE EYE, PRODUCED BY INJURY.

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Traumatic Intraocular Hæmorrhage must be clearly distinguished from those hæmorrhages within the eye which are so commonly associated with, but secondary to, some special disease, or from that which is seen occasionally in patients who, without suffering from any actual disease, have manifestly a peculiar hæmorrhagic diathesis. It is dependent solely on an injury causing rupture of the vessels of one or more of the vascular coats of the eye, and a consequent effusion of blood. It may occur *with or without* rupture of the external coats of the eye. For convenience of description, and also with reference to the severity of the results, intraocular hæmorrhage may be divided into anterior and posterior hæmorrhage.

Anterior intraocular hæmorrhage is the effusion of blood from the more superficial structures of the eye into the chambers anterior to the crystalline lens. It is generally induced by a less severe injury than that which gives rise to the deep or posterior hæmorrhage, and its results are far less detrimental to the eye.

Although hæmorrhage within the eye is very frequently limited to the chambers anterior to the lens, yet anterior hæmorrhage is also very often associated with the deep or posterior form.

Anterior hæmorrhage may take place from an injury to the iris or the ciliary processes; it may be confined solely to the anterior chamber, or the posterior chamber between the iris and the lens may also be occupied by the clot. Thus, if the bleeding commence from the ciliary processes, the blood usually trickles through the pupil, and occupies more or less of the anterior, as well as the posterior chamber.

Bleeding into the vitreous body may and frequently does happen from a laceration of the ciliary processes; but this is a more severe injury, and at present we are only considering the anterior form of hæmorrhage.

1. *Hæmorrhage into the Anterior Chamber.* This is the most common form of intraocular hæmorrhage, and at the same time the least severe. It may vary in extent from a few drops of blood to a quantity sufficient to fill both the anterior and the posterior chambers. Generally, however, when the bleeding arises from an injury to the vessels of the iris, it is confined to the anterior chamber; for, as the blood

flows, the iris is pushed backwards towards the lens, and the blood, rapidly coagulating, does not pass through the pupil into the posterior chamber, even though the hæmorrhage be sufficient to form a clot large enough to fill the whole of the anterior space. This, however, is not generally the case when the hæmorrhage occurs from the ciliary processes; for the anterior chamber of the eye is so much larger than the posterior, that the blood soon finds its way through the pupil, and gravitates to the bottom of the space in front of the iris.

The most usual causes of hæmorrhage into the anterior chamber are either rupture of one or more of the superficial vessels of the iris, or a distinct laceration of its structure, or a detachment of a portion of the iris from its ciliary circumference (coredialysis). The blood, as it is effused from the lacerated vessels of the iris, sinks at once to the bottom of the anterior chamber, quickly coagulates, and, if not much in quantity, may be seen as a small clot occupying its lower part, and moulded as it were to it. If, however, the bleeding be more severe, the whole anterior chamber may be filled with one large coagulum, which will entirely occlude the pupil and iris. This more extensive hæmorrhage is usually owing to a detachment of the iris from its ciliary border, when, on account of the number of vessels necessarily torn through, and also of their larger size, the quantity of blood which is poured out is considerable.

Prognosis. If the patient be first seen within a few hours, or even on the day following the injury, the clot of blood in the anterior chamber, according to its size, will mask more or less the immediate cause of the hæmorrhage; but after a few days, when the blood has been absorbed, a rent in the iris, or a separation of it from its ciliary connexion, will indicate the site from which the blood has been effused; unless, indeed, the hæmorrhage has proceeded from the simple rupture of some superficial vessel of the iris, in which case the interval of time necessary for the absorption of the blood will probably have obliterated nearly all trace of the injury.

If, on examination, the injury be found to be limited to a detachment, or to a laceration of the iris, and none of the deeper parts are involved, and there is no rupture of the external coats of the eye, the prognosis is favourable; and this, even though the detachment of the iris from its circumferential margin be as much as one-sixth or even one-fourth of its entire extent. But if, in addition to the laceration or detachment of the iris, there be a wound of the sclerotic or cornea, the danger of the injury is greatly increased, and the prognosis is much more unfavourable.

The bleeding from a coredialysis, or separation of the iris from its ciliary border, is generally extensive, even though the detachment is small; and it often goes on until the anterior chamber is filled with blood, when the clot seems to arrest the continuance of the flow by pressing on the vessels from which it is being effused. Shortly after the injury, it is very probable that the eye may become inflamed and painful, partly from the contusion which all the tissues of the eye must have suffered from the blow, and partly also from the special injury to the iris itself; but if the external coats of the eye have been uninjured, or but slightly contused, and the hæmorrhage is limited to the anterior chamber, the prognosis will be favourable.

The clot of blood in the anterior chamber will be first macerated by the aqueous humour, and then become rapidly absorbed; and in from three to eight days after the accident, according to the quantity of blood effused, sufficient progress will have been made to allow the surgeon, by a visual examination, to

ascertain the exact extent of the injury. For a long but variable time after the clot has disappeared, the iris presents a greenish appearance, owing to the aqueous having become stained a little yellow from the blood; but this ultimately disappears; and, although a rent in the iris or a coredialysis remains, yet the patient may have a good useful eye. The separation of the iris from its ciliary attachment may be so extensive as to form another pupil, through which, by an examination with the ophthalmoscope, the fundus of the eye may be clearly seen; still, if the posterior parts of the eye are sound, good single vision will remain: the second image which will be formed on the retina will not be appreciated.

Treatment. When the hæmorrhage is confined to the anterior chamber, and there is no rupture of any of the external tunics of the eye, the case generally does well. In this, as indeed in all cases of injury, rest to the eyes is essential: all work should for a time be forbidden, and the eyes should be shaded from strong light. If the anterior chamber be occupied by a large clot of blood, great care for the first few days after the injury must be taken of the eye, as, until it has been absorbed or nearly so, a correct diagnosis cannot be arrived at. As the cause of the hæmorrhage is always some violence, it is reasonable to anticipate some contusion; and to guard against any untoward after-results, such as iritis or ophthalmitis, it is a wise precaution to apply two or more leeches to the temple; and, if the eye should continue painful, to repeat them in twenty-four or thirty-six hours. Cold applications are the best suited, and afford the most comfort to the eye. A double fold of linen, wet with cold water, may be laid over the eye, and kept in its place with a single turn of a light roller, and moistened from time to time with a little fresh water from a sponge; or, if the eye be painful, a cold lotion of belladonna may be used in the place of the water-dressing.

A moderate diet and a limited amount of stimulants should be enjoined, as placing the patient in a condition favourable to recovery; and the bowels, if necessary, should be acted on with some gentle purgative. The administration of mercury is not necessary, and will do harm; it will not promote absorption, but will depress the patient.

The treatment formerly recommended, of puncturing the anterior chamber to let the blood escape, is wrong both in theory and practice. The object of the puncture is to let the blood escape; but this it must generally fail to do, as the blood, within a few minutes after its effusion, forms a coagulum, and will not run from the eye through an incision in the cornea. Even if the eye could be seen by the surgeon immediately after the infliction of the injury, and before the blood has coagulated, still the treatment would be prejudicial, as it is not the presence of the blood in the anterior chamber which is likely to give rise to untoward symptoms, but the contusion or laceration of the iris which has produced it. The mere removal of the blood will not benefit the eye, whilst the attempt to do so may injure it.

CASE I. Hæmorrhage into the Anterior Chamber, from Coredialysis occasioned by a Blow on the Eye with a Cork from a Bottle of Soda-water. T. W., aged 45, came to the hospital on May 23rd, 1865, having half an hour previously received a blow on the right eye from the cork of a soda-water bottle. He was about to open a bottle of soda-water; and, whilst speaking to a person near him, the cork unexpectedly flew out and struck him on the right eye. There was some hæmorrhage into the anterior chamber, sufficient to form a thin clot across the lower third of the iris, but not to occlude the pupil. At the upper and outer circumferential margin, there was a separation of the

iris from its ciliary attachment to the extent of about one-quarter of an inch. The pupil opposite the detachment was paralysed. He was ordered to have two leeches applied to the temple; and a fold of linen, wet with the belladonna lotion, to be laid over the eye.

May 26th. The blood was quite absorbed. The portion of iris which had been torn from its ciliary border was loose and tremulous. The lower margin of the pupil acted well, but the upper and outer was paralysed. The case did well.

CASE II. Hæmorrhage into the Anterior Chamber from a Blow on the Eye with the Fragment of a Rivet. Francis P., aged 31, a shipwright, came to the hospital on the morning of June 27th, 1865, having, about four hours previously, met with an injury to the left eye. Whilst cutting a cold rivet, a fragment, about one-fourth of an inch in size, flew off and struck the left eye. On examining the eye, the lower half of the anterior chamber was seen to be occupied by a clot of blood. The eye was red; but there was no abrasion of the cornea, or wound of the conjunctiva. The upper border of the pupil could be seen, but the lower half of it was concealed by the blood. He was ordered fifteen grains of purgative powder at bedtime; and to apply a fold of linen, wet with the belladonna lotion, over the eye.

June 30th. The blood was nearly absorbed. The pupil could be seen widely and evenly dilated. There was no pain in the eye. He was ordered to continue the lotion.

July 4th. The blood was now absorbed, and the eye free from all pain. No detachment of the iris from its ciliary border could be seen.

It is probable, in this case, that the hæmorrhage was caused by the rupture of some small vessels near the greater circumference of the iris, but that there was no absolute separation or coredialysis.

The man ceased his attendance as an out-patient, having fully recovered the use of his eye.

CASE III. Hæmorrhage into the Anterior Chamber, following a Blow on the Eye. William N., aged 34, a shipwright, came to the hospital on January 18th, 1864. He stated that on the previous evening, whilst striking a rivet, a fragment of the size of a pea flew off and struck the eye.

Present State. At the lower and inner margin of the cornea there was a small jagged abrasion; and corresponding with it was a small clot of blood lying at the bottom of the anterior chamber, and resting against the iris, but not of sufficient size to reach the pupil. The upper half of the pupil acted well and rapidly; but the lower half was quite stationary, and unacted on by the stimulus of light. The sight was slightly dim. He was ordered two leeches to the temple, and a belladonna lotion to the eye.

Jan. 22nd. All the blood was absorbed. The eye was quiet and free from pain.

Jan. 25th. The eye was now well, and the patient was discharged.

In this patient, the hæmorrhage probably took place from a rupture of one or more of the vessels of the iris at its ciliary circumference. The temporary paralysis of the lower portion of the iris was due either to the pressure of the blood-clot, or to some contusion of the ciliary nerves which supply its inferior border.

CASE IV. Extensive Hæmorrhage into the Anterior Chamber from a large Detachment of the Iris from its Ciliary Circumference, occasioned by the Bursting of a Squib close to the Eye. Eliza B., aged 21, was sitting in her garden on the 5th of November, 1861, when a squib, thrown over the wall by a child, burst within a few inches of the right eye. The eye was struck as it exploded. Immediately she suffered great pain in

it; and very shortly afterwards she found that with it she was quite blind. She came under my care on the following day. The eye was then very painful; the anterior chamber entirely occupied by a clot of blood, so as to render it impossible to distinguish any of the internal structures; and the whole eye was inflamed. Leeches were applied to the temple; and a fold of linen, wet with cold water, was laid over the eye.

Under this treatment, the pain and redness of the eye subsided; and, after eight days (on November 14th), the blood was sufficiently absorbed for an exact examination to be made. It was then found that, at the lower and inner part, an extensive detachment of the iris from its ciliary attachment (coredialysis) had taken place; but, as far as could be then ascertained, the lens was clear. The case progressed most satisfactorily. The blood, in a fortnight, was quite absorbed; but the aqueous continued of a yellow colour for many weeks afterwards, giving to the iris a greenish tinge. The hæmorrhage, as the result proved, was limited entirely to the anterior chamber; and the coredialysis was the only injury the eye sustained. The patient, three months after the accident, was able to read No. 1 of Jäger's test-types. The detachment of the iris from its marginal circumference was so extensive that a distinct second pupil was formed, through which, with the ophthalmoscope, the fundus of the eye could be clearly seen. The vision, however, with that eye was single.

[To be continued.]

Reviews and Notices.

THE MALFORMATIONS, DISEASES, AND INJURIES OF THE FINGERS AND TOES, AND THEIR SURGICAL TREATMENT. By THOMAS ANNANDALE, F.R.C.S. Edin., Lecturer on Surgery; Assistant-Surgeon to the Edinburgh Royal Infirmary. The Jacksonian Prize Essay for the Year 1864. Pp. 285. Edinburgh: 1865.

IN this comprehensive treatise, Mr. ANNANDALE has collected a large amount of both curious and practical information regarding the pathology and surgery of the digits, and has arranged it in seven chapters; viz.: 1. Congenital Affections of the Digits; 2. Inflammatory Diseases; 3. Tumours; 4. Injuries; 5. Non-congenital Contractions and Distortions; 6. Excision of the Joints and Bones; 7. Amputations.

In the first chapter, the author considers Congenital Affections under the following heads: Hypertrophy; Deficiencies; Supernumerary Fingers and Toes; Union; Contraction; and Tumours. These deformities, he says, may either be hereditary, or may occur in a single member of a family independently of any hereditary tendency.

Many interesting instances of various forms of congenital hypertrophy and deficiency are noticed. In cases of the latter class, Mr. Annandale says that the deformity may consist in a diminution of the number of fingers or toes, or of their constituent segments—these conditions being generally combined, and the deficiency of segments being generally also a characteristic of supernumerary digits. A deficiency, in number or in development, of the digits is also occasionally found connected with other congenital deficiencies of the extremities. Some-

times, also, as Drs. Simpson and Montgomery have pointed out, portions of the digits and extremities are amputated *in utero*, and in some cases rudimentary digits sprout out from the stumps thus formed.

Supernumerary Fingers and Toes are classified by the author as follows.

"1. As a deficient organ, attached loosely or by a narrow pedicle to the hand, foot, or another digit.

"2. As a more or less developed organ, free at the extremity, and articulating with the head or side of a metacarpal, metatarsal, or phalangeal bone, which is common to it and another digit.

"3. As a fully developed organ, having its own metacarpal or metatarsal and phalangeal bones distinct.

"4. As a more or less developed organ, intimately united along its whole length to another digit, and having either an additional metacarpal or metatarsal bone of its own, or articulating with the head of one which is common to it and the other digit." (Pp. 26-7.)

The number of supernumerary digits is generally confined to one; but cases, to which reference is made by Mr. Annandale, have been recorded in which two, three, or four, and even as many as eight, supernumerary digits have been found in one or more of the extremities.

The treatment varies according to the nature of the case. In the first and second varieties described by the author, the digit is to be removed by operation; but, in the second variety, more care is required, in consequence of its being sometimes unavoidable to open a synovial capsule belonging both to the supernumerary and to the normal digit.

"If the additional digit be very intimately connected with another finger at its articulation, and especially if this be a thumb, it is, I think, very questionable whether it should be removed; for the operation is almost sure to damage more or less the usefulness of the remaining digit, and thus the efficiency of the hand may be sacrificed in order to get rid of a deformity which is merely unpleasant from its unnatural appearance." (P. 43.)

He would, however, remove the additional thumb when, as in a case which came under his care, it is "distorted and immoveable".

The third variety very rarely requires surgical interference, as the supplementary digits usually have independent and useful movements. Cases of the fourth variety must be treated like those of union of the fingers or toes.

In speaking of Union of the Digits, Mr. Annandale describes three varieties or grades of the deformity—union by loose folds of skin, by connection of the skin and deeper soft textures, and by union or fusion of bones. Sometimes, also, the digits of a hand or foot may be compressed together into one lump.

In the treatment of the first variety (the true webbed condition), Mr. Annandale recommends, in order to prevent reunion of the divided parts, a modification of an operation proposed by M. Nélaton. The French surgeon makes a longitudinal incision along the centre of one finger on its dorsal aspect, and along the other on its palmar aspect; in this way forming an anterior and a posterior flap, and so preventing the cut surface of the fingers from being placed in apposition. Mr. Annandale considers this extent of flap unnecessary; and that the object