Horsley used to stitch the lids together before removal of the ganglion. I do not adopt this procedure as a routine because more than half my patients with anaesthesia have escaped without any ulceration. Mr. Foster Moore has frequently rebuked me for not stitching the eyelids—in fact, he does so whenever I have to invoke his aid. Perhaps he is right, but I am anxious to hear the views of others as the result of their experience. I used to irrigate the eye daily, keeping it carefully bandaged for the first fortnight or so, but I no longer do this. A plan that seems to work very well is to keep the upper lid carefully strapped down for two or three weeks, then to allow the lids to open, but to put an eye shield on, which is worn at first both indoors and out, then only outdoors, and finally removed altogether.

The first sign of commencing trouble is injection of the conjunctival vessels, and if this persists I always get the lids stitched at once. If an ulcer has already formed—and they form very quickly—it will be a very superficial affair at this stage, and will heal as a rule without leaving any corneal opacity. I usually leave the lids stitched together for a period of four to six months in those cases in which an ulcer is developing.

Let me repeat that in this series of cases corneal ulceration has occurred within a short interval in 45 per cent. of those individuals in whom a complete anaesthesia in the distribution of the first division of the fifth nerve has been produced. I do not know whether my experience is similar to that of others, and the figures are not large enough by themselves to establish any theory, but the suggestion which arises from a consideration of these figures is that the tendency to ulceration in the cornea desensitized by injury to the ganglion is not due to trauma alone. If there is a nervous factor involved it is difficult to define the manner in which it operates. I do not think that there is any evidence which would support the theory of a trophic nerve influence, but such cases as these we are considering, perforating ulcers in tabes dorsalis, and bed-sores arising with startling rapidity in acute myelitis, prove that interference with the sensory supply of a part renders the tissues peculiarly susceptible to degenerative or destructive processes.

INTRAVENOUS UROGRAPHY IN CHILDREN*

BY

CECIL G. TEALL, M.B., CH.B.

RADIOLOGIST, CHILDREN'S HOSPITAL, BIRMINGHAM

The radiological investigation of the urinary tract in children has in the past been far from satisfactory. The introduction of retrograde pyelography brought about an enormous improvement in the value of the investigation of the supravescical portion of the urinary tract in adults, and in them it has become a routine method of examination, but in children, for a number of reasons, it is by no means possible to use it as a routine method.

DIFFICULTIES IN RETROGRADE PYELOGRAPHY

While it is true that in the hands of a skilled urologist the technique of the examination does not present any insuperable difficulty, many surgeons who find no trouble in the procedure required in adult patients find a considerable amount in the case of children—it is, in fact, a procedure calling for special skill and training. This, in the first place, is a very definite reason why retrograde pyelography cannot be used as a routine method of investigation in children. When the technical difficulties have been overcome, however, there still remain other objections to this method of examination. Even the slight

trauma resulting from the skilled manipulations of the urologist is liable to be followed in children by much more severe general disturbance than is the case with adults, while as a result of catheterization of the ureters children also seem to be much more prone to develop ascending infections of the urinary tract. There is, further, the fact that in children the procedure calls for general anaesthesia. This not only makes the production of satisfactory radiographs free from respiratory movement much more difficult for the radiologist, but from the surgeon's point of view it is also more difficult to know when the kidney pelvis is adequately filled without being over-distended. Lastly, there is the fact that even when this method of investigation is advised permission to proceed with the examination is frequently refused by the parents.

VALUE OF INTRAVENOUS METHOD

The introduction of a method of visualizing the urinary tract without having to resort to instrumentation was therefore a matter of considerable importance to paediatricians. Interest was at once aroused when in 1929 Zwick, working in von Lichtenberg's clinic, used uroselectan for this purpose, and with it was able to show that intravenous urography was not only possible, but was a practical clinical method of investigation. Although for a time opinions were in doubt as to the diagnostic value of intravenous urography as compared with retrograde pyelography in adults, it was at once obvious that, whatever its limitations, it was of considerable value in children, for it would at least give some information which had in many cases been previously unobtainable. This was in the first few weeks after the introduction of uroselectan: further experience has shown that its value is by no means small, and that in intravenous urography we have a method of investigation of the greatest possible value.

That the method of examination has been of practical clinical value is shown by the fact that while in the x-ray department at the Children's Hospital, Birmingham, in the two years from 1928 to 1930, only six retrograde pyelographic examinations were made, during the last two years fifty patients have been investigated by the intravenous method. The technique is quite simple to apply in the case of a child, especially since the introduction of uroselectan B, which has been in every way an improvement on the other preparations, uroselectan and abrodil, which had been in use previously. This substance causes no general disturbance, and with no more upset to the child than is occasioned by an intravenous injection, urograms of great practical value can be obtained—in very marked contrast to the procedure necessary to produce pyelograms by the retrograde method. I do not suggest that the intravenous method has replaced the retrograde method, for the limitations of intravenous urography are the same in children as in adults. As in adults, the two methods are complementary and not mutually exclusive, but in a large number of cases the intravenous method will give all the information that is required, and since it can so easily be used without upsetting the patient, it is often employed where one would hesitate to make a pyelogram by the retrograde method.

TECHNIQUE

The technique of the examination is extremely simple. It consists of the intravenous injection of uroselectan B. The dose used varies with the age of the child. For a child of 5 to 7 years we give a third of the adult dose, with a reduction for younger children, but in no case have we injected less than a quarter of the adult dose—namely, 10 grams of uroselectan. No case has shown any untoward reaction, nor has any patient been in any way upset to a greater extent than is the case with any intravenous injection. The first film is made almost as soon as the injection is finished, certainly within the first ten minutes, and we find it best to inject the uroselectan in the x-ray department with the child on

* Read in the Section of Radiology at the Centenary Meeting of the British Medical Association, London, 1932.

the couch ready for the exposure to be made. Further films are made at thirty and fifty minutes after the injection. The chief difficulty with which the radiologist has to contend is the presence of gas collection in the alimentary tract. This gives rise to more trouble in children than it does in adults, especially when they are confined to bed. No method of special preparation has been of much use in my experience—aperients and enemata seem often to make it worse. Nothing does so much good as allowing the child to be up and about when this is possible. The method I find most effective is to give a dose of pulv. glyc. co. forty-eight hours before the injection, and if possible to have the child up and about. When the preliminary film shows large gas collections in spite of this preparation I wait, if possible, a few days and try again, but if the gas collection persists I do not now regard it as a contraindication to proceeding with the injection, as one can often arrive at a diagnosis in spite of the gas collection, and as the injection causes so little inconvenience to the patient, it is always worth while making the attempt. A recent innovation in the examination of young children which I have found to be of considerable value is the use of the Lysholm fixed Bucky grid. The faint lines of this grid do not detract from the diagnostic value of the films, and it enables one to obtain the advantages of a film made with a Potter-Bucky diaphragm without entailing the disadvantages which are associated with the longer exposure required to allow time for the grid to move. The exposures can be made in a fraction of a second, an enormous advantage when one is dealing with infants and small children.

USES AND INDICATIONS

The indications for intravenous urography in children are much the same as those for which it is used in adults. It can be employed whenever we wish to visualize the urinary tract, while it will also give certain information with regard to kidney function and the dynamics of the urinary tract. I have found it extremely useful in children for the purpose of localizing doubtful shadows in the region of the kidneys and ureters. Owing to the fact that the pelvic shadow is not so dense as that obtained with retrograde pyelography the outline of a stone may be seen through the shadow of the uroselectan, thus rendering its localization more easy. In the case of doubtful shadows which are approximately in the line of the ureter, while it is true that one seldom sees the ureter filled throughout the whole of its length in any one film, there is almost always one film in the series which shows that portion of the ureter filled which is in the region of the doubtful shadow.

It is, however, in the investigation of cases of chronic pyuria that intravenous urography has been found of particular value in children. Ordinary medical treatment cannot hope to bring about a cure in these cases when there is an associated congenital deformity in the urinary tract. Such deformities would appear to be much more common than was at one time supposed. My colleague Dr. Neale found congenital abnormalities in five out of a hundred consecutive necropsies in children. He takes the view that while there is no useful purpose to be served by making an intravenous urogram in cases of pyuria which clear up quickly, this method of investigation should be used in all cases which do not respond to medical treatment in a reasonable time.

Previously the ordinary radiographic examination of the urinary tract could be supplemented by cystography and retrograde pyelography. Cystography is a simple procedure and presents no difficulty, but unfortunately the abnormalities in these cases of chronic pyuria are almost always in the upper portion of the urinary tract, and while occasionally one can demonstrate hydronephrosis by the cystographic method, it is not possible as a general rule. For the reasons stated retrograde pyelography is not a practical routine method of investigation. The introduction of intravenous urography has, however, revolutionized the investigation of these

cases. Its simplicity and safety allow of its being used in all cases. By this method one can demonstrate congenital abnormalities when they exist, and can also show whether the trouble is unilateral or bilateral—a most important matter to decide from the point of view of treatment, since in unilateral cases surgical treatment is indicated. The most common abnormality seen is hydronephrosis, which may or may not be associated with a condition of hydronephrosis. In no case of chronic pyuria sent for examination has the intravenous method failed to demonstrate an abnormality in the urinary tract, and an analysis of a series of cases which were sent for investigation, although they had responded to treatment and been cured, showed that in every one the report on the urograms was that they were normal. Intravenous urography, therefore, is of the greatest possible value in infants and children for the reason that in them, for the first time, it has provided a practical routine method of visualizing the upper urinary tract.

I should like to express my thanks to my colleague, Dr. Thorpe, and to the sister in charge of the x-ray department at the Children's Hospital, Birmingham, for their help in connexion with this investigation.

BIBLIOGRAPHY

- Acta Rad.*, 1931, xii, 65.
 Brasch, W. F.: *Journ. Urol.*, 1931, xxv.
 Bugbee, H. G., and Murphy, B. J.: *Ibid.*, 1931, xxv.
 Herbst, R. H.: *Ibid.*, 1931, xxv.
 Neale, A. V.: *Arch. Dis. in Child.*, 1931, vi.
Surg., Gynec. and Obstet., September, 1930.
 von Lichtenberg, A.: *Journ. Urol.*, 1931, xxv.

A CASE OF SYPHILIS (GUMMATA) OF THE HEART

BY

G. T. BURKE, M.D. AND H. STOTT, M.D.
 M.R.C.P. M.R.C.P.

LIEUT.-COLONEL I.M.S. LIEUT.-COLONEL I.M.S.
 PROFESSOR OF MEDICINE PROFESSOR OF PATHOLOGY
 KING GEORGE'S MEDICAL COLLEGE, LUCKNOW

Myocardial syphilis is generally recognized as occurring either as a few large scattered gummata or as small diffuse gummata scattered as an infiltration throughout the musculature, especially in the septum and in the region of the bundle of His. The large gummata constitute, as in other organs, the real specific naked-eye lesion, of which Dieulafoy's description can hardly be improved:

"Their yellowish appearance, their elastic consistency, their well-defined limits, their multiplicity, or the coexistence of miliary gummata in the neighbourhood can scarcely allow any mistake. In some cases they are surrounded by healthy muscle tissue, and project towards the endocardium or towards the pericardium. The serous membranes covering them are thickened, and the layers of pericardium may be adherent. In other cases the endocardium is not thickened but ulcerated, the gumma having emptied itself into the ventricular cavity, which has become hollowed out at the expense of the myocardium, with the formation of partial aneurysm."

Projecting cardiac gummata are distinctly rare: when recorded they have been into the ventricular cavity. No case of auricular gummata has been noted in a survey of the literature available in Lucknow. In the case reported below the degree of obstruction to the blood in the superior vena cava was remarkable, producing great dilatation of that vessel, and marked head and neck oedema. The sudden death was apparently due to a thrombosis of the slowed blood flow in the large vein. No gummata were found in the neighbourhood of the bundle of His, although from the characters of the pulse it would not have been surprising to have found them.