

AN ANALYSIS OF 300 INTRAVENOUS PYELOGRAPHS *

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The many pediatricians who specialize in disease and anomalies of the genito - urinary system agree that one of the best methods for discovering such conditions is intravenous pyelography. Thanks to this technique, which has become one of the routine procedures in medicine, the diagnosis of pathologies of the urinary system has become possible as often in the pediatric field as in the adult. This method is also valuable in the differential diagnosis.

In an analysis of 300 intravenous pyelographs made at Hacettepe Children's Hospital, pathology was discovered in 33 per cent. This is a very high percentage but the fact that most of these patients came to us in the late stages of disease should be kept in mind. A small number of these children was known to have urinary system disease before intravenous pyelography was performed. In the majority of cases, however, both of those observed in the outpatient clinic and of those admitted to the hospital, the probabilities merely suggested urinary pathology.

In our analysis we found that in about half the patients pyuria was the chief condition indicating the need for intravenous pyelography. Other indications were fevers of unknown origin, gross and microscopic hematuria, difficulties and disturbances of urination, abdominal masses and albuminuria. (Table 1.)

Relying on one or more of these symptoms we found by intravenous pyelography the information shown in table 2.

Though urinary calculi are known to be the most frequent pathology of the urinary system in Turkey, and although their presence can be confirmed by direct roentgenograms, intravenous pyelography is helpful in pointing out the deformities and atrophies of the calices and the complications of hydronephrosis and pyelonephritis. It also makes it possible to find non - opaque stones.

Intravenous pyelography is also frequently useful as a method for differential diagnosis in cases of glomerular nephritis, infection

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TABLE 1

INDICATIONS FOR INTRAVENOUS PYELOGRAPHY *

COMPLAINT	NUMBER OF CASES
Pyuria	132
Hematuria (microscopic)	89
Hematuria (gross)	15
F.U.O.	99
Disturbances of urination	69
Abdominal pain	60
Positive urine culture	56
Proteinuria	45
Abdominal mass	35
Vomiting	31
Failure to gain weight or grow	27
Hypertension	22
Recurrent back pain	19
Enuresis	17
Congenital malformation	11
Anomaly of external genitalia	4
Hydrocephalus	2
Trauma	1
Megacolon	1

- * In most cases there were two or more indications.

TABLE 2

INCIDENCE OF ABNORMAL PYELOGRAMS

DEFECT	NUMBER OF CASES
Urinary Calculi	43
20 in the kidney	
10 in the ureter	
13 in the bladder	
Hydronephrosis	15
Pyelonephritis	14
Agenesis	12
Tumor	11
Double kidney	6
Hypoplasia and Aplasia	3
Aganglionic ureter	3
Normal variations	3
Disfunction	2
Valve in ureter	1
Stricture in ureter	1
TOTAL	114

in the urinary tract and enuresis. By this method it is possible to confirm the existence of a normal urinary system as well as to reveal any pathology. Also by using this method it is possible to discover tumoral lesions of renal origin in their early stages and to treat them surgically.

In our series of intravenous pyelographs, 5 per cent showed congenital malformations, of which 4 per cent were anomalies of the external genitalia. This figure is higher than that obtained by Askin and Rubin¹ in summarizing the records of 1300 children admitted to Sinai Hospital in Baltimore in 1949 and 1950 (3.5 per cent of anomalies) but it is substantially lower than the 10 per cent of anomalies found by Campbell in 47,483 necroscopies done in Bellevue and St. Vincent's Hospitals in New York and at Mountainside Hospital in Montclair, New Jersey.²

In the single case of megacolon we observed, we were not able to find the megaloureter which other investigators have reported. It is obvious that with only one case no definite conclusions may be drawn but our finding agrees with that of Askin et al. who were unable to demonstrate megaloureter in 10 cases of megacolon.³ Swenson, however, mentions megaloureter in 5 per cent of his cases of megacolon.⁴

As shown in the graphs (fig. 1) it may be seen that of our 300 cases, 68 were 0-1 year old; five of these were 2 weeks old or less.

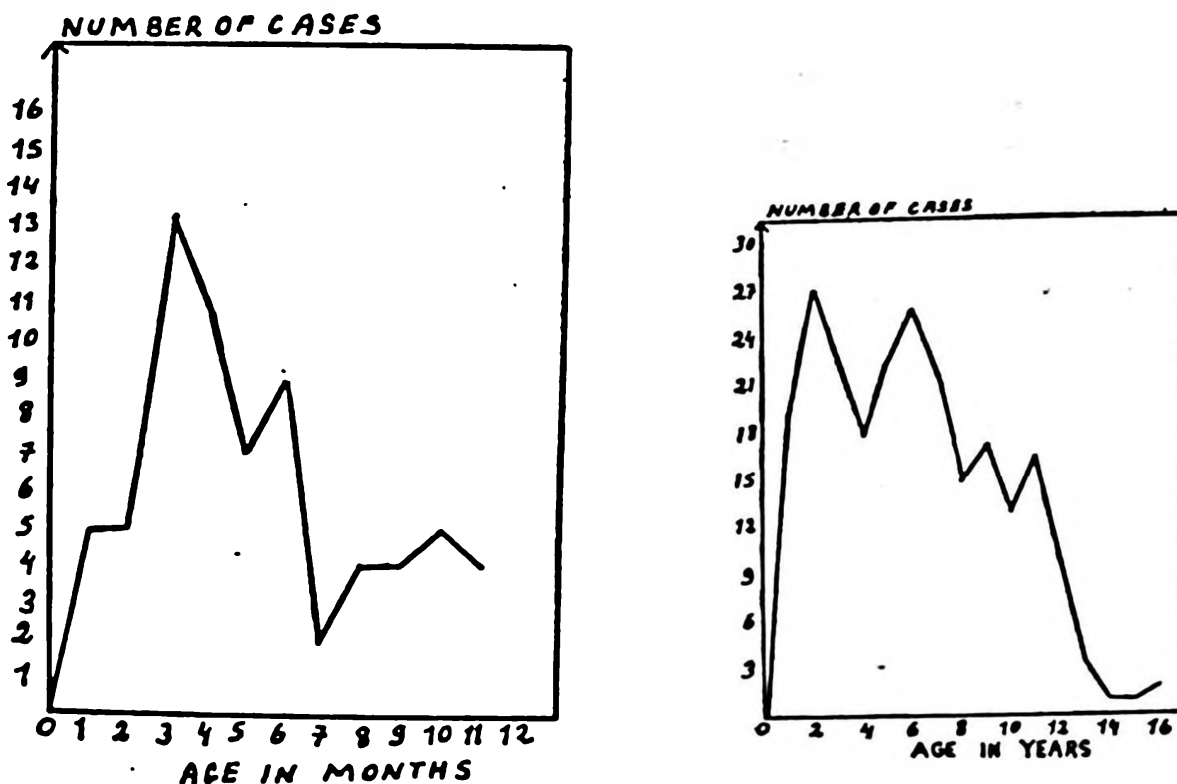


Fig. 1. Age of patients at time of examination.

Only one third of the patients was female and one notable fact emerges: that the percentage of stones is higher in boys and the percentage of infections in the urinary tubes is higher in girls.

Intravenous pyelography causes no complications with the exception of some mild allergic reactions. Out of the 797 excretory urograms made by Askin et al.³ only 4 showed a transitory reaction and in our 300 cases no complications occurred.

It is felt that even such mild allergic reactions can probably be avoided by careful observation of the functional disturbances, iodine idiosyncracies and nonprotein nitrogen (which should never be higher than 60 mg. per 100 ml.).

Summary

In addition to the simplicity, safety and value of intravenous pyelography as a diagnostic tool it is an important procedure in Turkey for revealing urinary calculi (our most frequent urinary pathology) the calix deformities and such complications as hydronephrosis and pyelonephritis. It is also invaluable in indicating necessary surgical treatment.

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