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Urological Research

CONFERENCE REPORT

The 5th Urolithiasis-Symposium Bonn – Wien

Vienna, April 23rd and 24th, 1977

H.-U. Eickenberg

This annual meeting is organised jointly by Prof. Vahlensieck, Bonn and Prof. Gasser, Vienna and brings together investigators and clinicians concerned with research into urolithiasis.

I. PATHOGENESIS OF UROLITHIASIS

Deetjen (Innsbruck) showed by microinfusion of organic acids and subsequent micropuncture of the tubules that there is a net secretion of oxalic acid into the proximal tubule. He demonstrated that there is bi-directional transport of oxalate in the proximal tubule in which the secretion exceeds reabsorption. In the distal tubule he was unable to find any significant movement of oxalate across the tubular cell.

Using the same micropuncture model, Hautmann (Aachen) studied the excretion patterns of ^{14}C-oxalate and ^{3}H-inulin. In contrast to Deetjen, he found no change in the oxalate concentration in the proximal tubule. The oxalate : inulin ratio of 1 : 3 which was found in the distal tubule was explained by active rediffusion of the oxalate.

Matouschek (Karlsruhe) reported new data on the solubility of calcium oxalate monohydrate in artificial and natural urine using his known model of diluting urine. He concluded that by increasing the urine volume by increasing fluid intake the concentration of calcium oxalate is decreased, and that stone formation may therefore be prevented. In his paper on the value of studying crystalluria in the management of stone formers Rose (London) concluded that this should be a routine clinical procedure. He found an increase of oxalate crystal formation and aggregation in stone formers compared with a normal patient group.

Bastian (Bonn) reported investigations concerning the site of nucleation carried out in the rabbit. He demonstrated that apart from the tubules and papillae the glomerulus and Bowmann's capsule could also be primary sites for nidus formation. This corresponded with biochemical analysis of kidney tissue which showed the highest calcium concentration in the area of the glomeruli. Considering microhaematuria in patients with stones Leskovar (Munich) suggested that damaged erythrocytes released a factor which caused agglomeration. Ideler (Tübingen) analysed uromucoid excretion in negroes and found that it was not reduced. This finding is in contrast to earlier findings. Bülow (Würzburg) reported two patients who had developed stones while receiving treatment with Co-Trimoxazole.

Using the rat model Brosig (Berlin) tried to clarify whether molecules which are ingested, absorbed via the gastrointestinal tract and eliminated in the urine could act as crystallisation nuclei. He demonstrated that large molecules such as lead sulphide reach the urine by absorption. Radioactive, labelled calcium oxalate crystals also seem to be absorbed and could be demonstrated by autoradiography in stones which were simultaneously induced with ethylene glycol and acidification. Examining lysozyme concentration in the urine and serum of stone patients Gasser (Vienna) found a statistically significant correlation between the elevated amount of lysozyme and the degree of damage to the tubules. He concluded that this was a change secondary to the urinary tract infection which accompanied the stones.

Grob (St. Gallen) looked at antibody coated bacteria on the surface of stones. Of 19 patients examined 10 had antibody coated bacteria in the urine and 11 on the stone

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surface. He considered that this confirmed the frequent combination of stone disease and immunologically active pyelonephritis.

II. INVESTIGATIVE METHODS

Armbruster (Bochum) presented his radiographic method to semiquantitatively demonstrate apatite in stones while Gebhardt (Bonn) attempted to identify the type of stone by looking at an X-ray. Using absorption formulae he clearly demonstrated that this is impossible because of the different thickness, composition and porosity of the stones. Bach (Bonn) compared the radiological and chemical analysis of 350 stones and indicated some errors in analysing the urate and phosphate components of stones.

Schneider and Hesse (Jena) reported on their results of standardising and centralising stone analyses in the German Democratic Republic. The analysis is done by X-ray diffraction and the stone composition data are then recorded on a uniform computer analysis sheet. By comparing the composition with temporal and geographical changes, the pattern of urolithiasis is being followed. Gebhardt (Bonn) reported on the computerised statistical analysis of 2000 stones. Data can be recalled on the type and distribution of stones among clearly defined population groups. These seem to be carefully developed programmes with a future potential to reduce stone formation.

III. CURRENT THERAPY

Russmann (Ulm) treated 100 patients with sodium cellulose phosphate and thiazides and claimed that he was able to prevent stone formation. In a further study by Rugendorff (Giessen) 22 patients with stones were treated with a longterm prophylaxis of cation exchangers (Campanyl) over periods of 2 1/2 to 3 1/2 years, and it was felt that this was a promising new mode of therapy.

Eisenberger (Munich) presented his prize-winning experimental model of percutaneous stone distruction with ultrasound. This method which was developed with in vitro experiments, was shown to work in the canine model and should now be suitable for clinical use.

It was the hope of the participants and organisers that the next symposium which takes place in Bonn in April 1978 will again provide the opportunity for the exchange of ideas on the pathogenesis of stone formation, report on new methods of clinical and experimental investigation and bring some more light to the controversy of prophylaxis.

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