

## Editorial

# Crystal and Stone Retention

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In the last few years much work has been done to study crystallization conditions of stone forming minerals. This issue, too, brings new information about factors governing urinary supersaturation (Ackermann and Baumann, Schwille et al.), about the measurement of the risk of calcium phosphate crystallization in urine (Tiselius). However, crystallization processes and crystalluria alone cannot explain urinary stone formation. The state of urinary supersaturation is too low to produce crystals large enough to be trapped in the upper urinary tract during urinary transit time [1]. These calculations mainly basing on in vitro experiments were confirmed in vivo by inducing crystalluria by oxalate ingestion [2]. Calcium stone formers with short-term recurrences as well as patients suffering from primary hyperparathyroidism passed even in their concentrated overnight urine crystals and crystal aggregates with diameters below those of renal collecting ducts, where the intraluminal crystallization seems to start. Already in 1937 Randall postulated that stone formation may be the result of fixed particle growth [3]. In this issue three authors were invited

to present their recent work related to problems of crystal and stone retention. Hering et al. give new information about the sites and morphology of calcification in the human kidney obtained by scanning electron microscopy. Dosch<sup>1</sup> describes large fibres observed on the surface of 15% of urinary stones which may be able to trap crystals and also may have some matrix function. Finally Schulz is reviewing his recent work about urinary back flow, dead water areas and vortex formation, factors probably being responsible for crystal and stone retention in the pelvi-calycal system.

## References

1. Finlayson B, Reid F (1978) The expectation of free and fixed particles in urinary stone disease. *Invest Urol* 15:442–448
2. Baumann JM, Futterlieb A, Lustenberger FX, Wacker M (1984) Kristallisationsphänomene im Humanurin nach alimentärer Oxalatbelastung. *Fortschr Urol Nephrol* 22:151–155
3. Randall A (1937) The origin and growth of renal calculi. *Am Surg* 105:1009

<sup>1</sup> For technical reasons this paper will be published in the next issue of *Urological Research*