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Grey Zone – Pediatric Urology

Paediatric Urology and the Dilemma of Low-quality Evidence for the Management of Common Urological Conditions (Vesicoureteral Reflux, Lower Urinary Tract Dysfunction, Undescended Testis) in Children

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1. Introduction

The majority of urological clinical problems in children are distinct and differ to those in adults in many ways. Quite a few of these conditions are rare and rather complex and cover a large area requiring special care from experienced specialists. Since paediatric urology represents a fairly young subspecialty emerging from its parent specialties urology and paediatric surgery, huge diversity in management exists. Therefore, a structured analysis of the literature in the field is impossible for many conditions. This is mainly because of a lack of well-designed studies and the limited availability of large randomised controlled trials. In addition, a considerable number of treatment options are related to surgical interventions for a large spectrum of different congenital problems. As a consequence, existing guidelines in paediatric urology mainly comprise consensus statements by panels of experts rather than guidelines based on sufficient evidence.

In this article we have selected a few paediatric urological conditions: vesicoureteral reflux (VUR) and its relation to lower urinary tract dysfunction (LUTD), and undescended testis and its long-term outcome with/without endocrine therapy. Although these are common conditions affecting many children for which proper evidence in the literature could be expected, they clearly reveal the difficulties in

appropriate management based on proper levels of evidence rather than expert opinion.

2. VUR and LUTD

Owing to the absence of high-powered controlled trials based on standard definition and classification of different clinical settings, VUR guidelines often are based on an expert opinion rather than evidence [1].

Over the last 20 yr, our understanding of reflux has changed from a sole congenital anatomic deficiency of the ureterotrigoal complex to a more functional problem involving LUTD that results in high intravesical pressure and consequently a predisposition to VUR. Initial reports have shown that more than one-third of children with VUR also have concomitant LUTD [2] and is more common in girls (36%) than in boys (20.5%) [3].

A majority of infants presenting early with dilating VUR also have dysfunctional voiding, including enlarged bladder capacity, overactive bladder, and incomplete bladder emptying [4]. The incidence of breakthrough infections and the risk of renal scarring are also greater if LUTD is present. However, the general approach adopted by the paediatric community lacks evaluation and management of LUTD or an understanding of its relationship to urinary tract infection [5].

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So far, this patient population has not been systematically assessed. Although there have been attempts to standardise the classification and terminology for the type and severity of LUTD, these are not yet well established, and reports lack a standard approach in defining the problem and its relation to reflux [6].

A widely accepted standard classification and definition of types of LUTD are essential. We should try to use the International Children's Continence Society classification and point out its deficiencies, as it is of utmost important that we share terminology to be able to compare outcomes. Trials looking at the prevalence and natural history of VUR associated with LUTD can then be used reliably. For patients with VUR and LUTD, investigating the efficiency of different management protocols such as standard urotherapy with or without medication (antibiotics and/or anticholinergics), endoscopic treatment, and reimplantation will then be possible.

3. Long-term outcome for undescended testis without endocrine therapy

There is still much debate and no international consensus on whether or not endocrine therapy in children with undescended testis can be of any benefit for testicular descent and preservation of fertility potential into adulthood. Unfortunately, most of the studies on hormonal treatment have been of poor quality, with mixed patient populations and heterogeneity for testis location and schedules and dosages for hormonal administration. In addition, long-term data are almost completely lacking.

Hormonal therapy using human chorionic gonadotropin (hCG) or gonadotropin-releasing hormone (GnRH) is based on the hormonal dependence of testicular descent, but has a maximum success rate of only 20% [7]. However, it must be taken into account that almost 20% of these descended testes have a risk of reascending [8]. In general, success rates depend on testicular location. The higher the testis is located before therapy, the lower the success rate, suggesting that testicular position is an important determinant of success [9]. Some authors recommend combined hCG + GnRH treatment. Unfortunately, this approach is poorly documented and the treatment groups were diverse. Some studies reported successful descent in up to 38% of non-responders to monotherapy [10].

Hormonal treatment may improve fertility indices [11] and therefore serve as an additional tool to orchidopexy. There is benefit from treatment with GnRH before (neoadjuvant) or after (adjuvant) surgical orchidolysis and orchidopexy in terms of increasing fertility index, which may be a predictor of fertility later in life [12]. It is still unknown whether this effect on testicular histology persists into adulthood, but it has been shown that men treated with buserelin in childhood had better semen analyses than with men who had childhood orchidopexy alone or placebo treatment [13]. Identification of specific subgroups of boys with undescended testis who would benefit from such an approach using hormones is difficult, since data for these

specific groups and additional data on the long-term effects are still lacking.

4. Conclusions

Discussion of different condition in paediatric urology with its complex issues is essential. We have to strive for a more prospective scientific approach to every specific urological condition in children, with contributions from all parties involved and an emphasis on proper outcome research. We have to promote this discussion and avoid biased and counterproductive reports whose lack of evidence does not further our understanding of the issues nor serve the interests of our patients.

Conflicts of interest: The authors have nothing to disclose.

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