

PEDIATRIC UROLOGY

Neoadjuvant gonadotropin-releasing hormone therapy before surgery and effect on fertility index in unilateral undescended testes: a prospective randomized trial

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Objectives: To investigate, in a prospectively randomized trial, whether preoperative gonadotropin-releasing hormone (GnRH) therapy improves the fertility index in primary cryptorchidism. Cryptorchidism is a common condition with a high risk of infertility. Treatment with GnRH appears to improve fertility later in life by inducing germ cell maturation.

Methods: A total of 24 boys, 12-123 months old (median 34.5), with 24 undescended testes were prospectively assigned to 2 groups during a 24-month period. The patients were randomized to receive either orchiopexy alone (n = 12) or orchiopexy combined with neoadjuvant GnRH therapy (n = 12) as a nasal spray for 4 weeks at 1.2 mg/d. In both groups, testicular biopsies were performed at orchiopexy, and the histopathologic fertility index was determined.

Results: The mean fertility index in the group treated with GnRH before surgery was significantly greater (0.88 +/- 0.31) than in the group without hormonal stimulation (0.49 +/- 0.52; P = .02). No significant correlation was found between the fertility index in the GnRH group and the patient's age.

Conclusions: The results of our study have shown that neoadjuvant GnRH treatment improves the fertility index in prepubertal cryptorchidism and, consequently, should improve fertility in adulthood.

Editorial Comment

Twenty-four boys were prospectively randomized to either undergo unilateral orchiopexy alone versus 1.2 mg of intranasal GnRH daily for 4 weeks prior to orchiopexy. Patients ranged from 12-123 months and biopsies were done during the orchiopexy procedure to evaluate the outcome of the hormone pretreatment. Their results showed an increased fertility index with more Ad spermatogonia per tubule in the hormone-treated group than the orchiopexy alone group. The statistically significant fertility index could only be observed in patients over three years of age.

Infertility in cryptorchid patients has long been a concern, which has led to surgery in younger age groups and consideration of hormone treatments. The major issue with all fertility studies in pediatric patients is that it takes 20-30 years follow up to evaluate the true outcome. Histology does not necessarily predict semen quality or fertility and this study has the same concern. It is interesting in this study that the older patients seem to have better outcomes with their pretreatment than younger patients, which is not intuitive. One of the other problems hampering the adoption of this pretreatment is that the GnRH analogs are not available in all countries (United States). I expect the best advice is to keep an eye on studies such as this for their impact in the future but it is likely to take a very long time before outcomes can be documented and a unified treatment plan adopted.

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Importance of methodology on (99m)technetium dimercapto-succinic acid scintigraphic image quality: imaging pilot study for RIVUR (Randomized Intervention for Children With Vesicoureteral Reflux) multicenter investigation

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Purpose: We reviewed our experience with (99m)technetium dimercapto-succinic acid scintigraphy obtained during an imaging pilot study for a multicenter investigation (Randomized Intervention for Children With Vesicoureteral Reflux) of the effectiveness of daily antimicrobial prophylaxis for preventing recurrent urinary tract infection and renal scarring. We analyzed imaging methodology and its relation to diagnostic image quality.

Materials and Methods: (99m)Technetium dimercapto-succinic acid imaging guidelines were provided to participating sites. High-resolution planar imaging with parallel hole or pinhole collimation was required. Two core reviewers evaluated all submitted images. Analysis included appropriate views, presence or lack of patient motion, adequate magnification, sufficient counts and diagnostic image quality. Inter-reader agreement was evaluated.

Results: We evaluated 70, (99m)technetium dimercapto-succinic acid studies from 14 institutions. Variability was noted in methodology and image quality. Correlation (r value) between dose administered and patient age was 0.780. For parallel hole collimator imaging good correlation was noted between activity administered and counts (r = 0.800). For pinhole imaging the correlation was poor (r = 0.110). A total of 10 studies (17%) were rejected for quality issues of motion, kidney overlap, inadequate magnification, inadequate counts and poor quality images. The submitting institution was informed and provided with recommendations for improving quality, and resubmission of another study was required. Only 4 studies (6%) were judged differently by the 2 reviewers, and the differences were minor.

Conclusions: Methodology and image quality for (99m)technetium dimercapto-succinic acid scintigraphy varied more than expected between institutions. The most common reason for poor image quality was inadequate count acquisition with insufficient attention to the tradeoff between administered dose, length of image acquisition, start time of imaging and resulting image quality. Inter-observer core reader agreement was high. The pilot study ensured good diagnostic quality standardized images for the Randomized Intervention for Children With Vesicoureteral Reflux investigation.

Editorial Comment

A pilot study of the Randomized Intervention for Children With Vesicoureteral Reflux participating institutions submitting DMSA scans was undertaken to evaluate quality. Written technique guidelines were given and the images were submitted to the two authors for review of image quality. The pilot study lasted for six months. Seventy studies were submitted, 10 of which were resubmissions because of unacceptable quality in the past. Fourteen institutions submitted cases. The studies compared radiopharmaceutical dose, time of imaging, overlap of kidney images and adequate counts in the region of interest with an overall quality evaluation by the referee nuclear medicine physicians. Sixty studies eventually went through the complete process and 10 of these were rejected for quality issues (17%). Sixteen of the studies had disagreement between the two nuclear medicine experts, most with minor discrepancies such as left right inversions, however one study was thought to be adequate by one and poor quality by another.

When details of routine clinical imaging studies are scrutinized in this fashion it makes one wonder about the clinical judgments that are made and the quality of imaging at one's own institution. These 14 institutions were chosen because of their interest and abilities and still significant problems in following a written

protocol, monitoring of the study while the patient is in the imaging department and processing the study were discovered. In short, there is still plenty of room for error.

Of the 70 patients studied in reality there should be 80, since 10 of them are resubmissions, which should make the statistics 14% worse. It should be noted in nuclear medicine that there has been a great effort in trying to standardize kidney imaging and yet it is still an ongoing process that has not filtered down to each and every institution.

The authors should be commended for publishing not only positive, but their negative results and letting clinicians recognize that a good deal of clinical judgment should be used in interpreting and relying upon imaging studies.

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