IN BRIEF

PAEDIATRICS

A standardized gynaecology curriculum is needed

A standardized gynaecology curriculum is needed for trainees in paediatric surgery according to the results of a survey of Canadian programme directors. In total, six of eight programme directors responded to the 27-question survey, which included questions regarding the fellowship programme, surgical practice, trainee exposure to paediatric gynaecology and envisioning a standardized gynaecology curriculum. Most respondents felt that trainees had minimal or inadequate training in imperforate hymens, Müllerian anomalies, vulvar abscesses, vaginal foreign bodies and labial adhesions. However, they asserted that trainees received adequate training in managing ovarian-related conditions and genital injuries. All respondents were interested in the creation of a formal gynaecology curriculum.

ORIGINAL ARTICLE Justice, T. D. et al. Is there a need for a formal gynecology curriculum in a pediatric surgery training program? A needs assessment. *J. Pediatr. Surg.* https://doi.org/10.1016/j.jpedsurg.2020.01.037 (2020)

PROSTATE CANCER

Variation in EBRT plan quality between centres

Statistically significant differences have been reported in prostate plans at four cancer centres that followed the prostate fractionated irradiation trial protocol. When each centre was compared with the other three, significant differences in plan quality metrics were observed for the bladder wall, the left and right femoral heads and clinical target volume. However, analysis of tumour control probability as well as rectal wall and bladder wall normal tissue complication probabilities suggested that the clinical significance of these differences is minimal. Local planning practices were partly responsible for the observed differences. Thus, these results could be used as a reference for the acceptable degree of variation between centres when a common protocol is adopted.

ORIGINAL ARTICLE Sun, L. et al. Variation in inter-institutional plan quality when adopting a hypofractionated protocol for prostate cancer external beam radiation therapy. *Int. J. Radiat. Oncol. Biol. Phys.* https://doi.org/10.1016/j.ijrobp.2020.02.026 (2020)

PROSTATE CANCER

MAOA inhibitor phenelzine efficacious in recurrent prostate cancer

The results of a phase II clinical trial investigating the monoamine oxidase (MAOA) inhibitor phenelzine in biochemically recurrent, hormone-sensitive prostate cancer have been published. In this open-label, single-arm clinical trial, 20 patients were recruited to receive 30 mg of phenelzine orally twice daily. The primary end point was the proportion of patients achieving a serum PSA decline of ≥50% from baseline and mood symptoms were assessed using the hospital anxiety depression score questionnaire. The results showed that 10% of patients had a maximal PSA level decline of ≥50% and 25% of patients showed declines of ≥30%. At 12 weeks after commencing treatment, 17 patients were still receiving phenelzine. Of these men, 20% had PSA declines of ≥30% and 5% had declines of ≥50%. Questionnaire results showed that anxiety decreased but depressive symptoms did not change. Rare, considerable but reversible cardiovascular toxic effects were observed; however, most treatment-related toxic effects were mild. Thus, MAOA inhibitors are a promising treatment option for men with recurrent, hormone-sensitive prostate cancer.

ORIGINAL ARTICLE Gross, M. E. et al. Phase 2 trial of monoamine oxidase inhibitor phenelzine in biochemical recurrent prostate cancer. *Prostate Cancer Prostatic Dis.* https://doi.org/10.1038/s41391-020-0211-9 (2020)

STONES

Assessing kidney stone composition using deep learning

A pilot study published in *BJU International* has shown the feasibility of deep learning to assess kidney stone composition from digital photographs. The ability to accurately determine stone composition using computer vision and deep learning could improve stone surgery, as automatic calculation of the required laser energy based on recognition of stone composition could improve the efficacy of lithotripsy.

To assess the feasibility of using deep learning to recognize stone composition, Black and colleagues took digital photographs of stones from five of the main composition categories and applied a deep convolutional neural network (CNN), ResNet-101, to classify each image. Human calcium oxalate monohydrate, uric acid, struvite, brushite and cystine stones were obtained from a stone laboratory. At least two images (surface and inner core) of dry stones were taken using a DSLR camera fitted with a macro lens. Each was processed using randomly generated computer-automated cross-sectional cropping. ResNet-101 was used as a multi-class classification model to classify each image.

Overall, 63 stones were photographed (17 uric acid, 21 calcium oxalate monohydrate, 7 struvite, 4 cystine and 14 brushite stones) and 127 images were generated. The sensitivity of the classification model differed depending on stone composition. Recall was highest for uric acid stones (94%), then calcium oxalate monohydrate stones (90%). Struvite and cystine stones were identified with moderate

PROSTATE CANCER

CRISPR–Cas9 ERβ deletion reveals roles in prostate

Deletion of the ERβ gene from the mouse genome using CRISPR–Cas9 technology reveals that ERβ regulates ventral prostate growth and acts as a tumour suppressor gene.

The study was led by Jan-Ake Gustafsson, whose lab at Karolinska Institute discovered ERβ in 1996. However, since its discovery, the role of ERβ has been contested — knockouts in the past have not been ideal as they knocked out only the DNA-binding domain, which is not required for ERβ signalling. Thus, the use of CRISPR–Cas9 gene editing, which can definitively delete the ERβ gene, enables unambiguous investigation of the role of ERβ.

Gustafsson's team used two single-guide RNAs (sgRNAs) to delete all ERβ exons and the proximal promoter in mouse zygotes, confirming complete loss of ERβ protein using immunohistochemistry. Tissue histology of the ventral prostate of the resulting $ERβ^{crispr-/-}$ mouse was assessed at 6 months and showed the presence of multiple foci of epithelial hyperplasia and in situ ductal-cancer-like lesions. These effects were maintained at 13 months but, interestingly, seemed to be abating by 18 months, at which time epithelial hyperplasia in the ventral prostate was reduced. However, fibroplasia was found in mice of all ages and, furthermore, desquamation was observed in 13-month-old mice that resembled that seen in men on androgen deprivation therapy, but this was not seen at 6 or 18 months.

Expression of two androgen receptor (AR)-regulated genes was assessed in order to understand how these changes might reflect androgen levels. Expression of both genes was increased in 8-month-old