ESPE NEWS

BRINGING THE LATEST IN PAEDIATRIC ENDOCRINOLOGY TO YOU

ESPE
European Society for Paediatric Endocrinology
Improving care of children with endocrine diseases by promoting knowledge and research

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Paediatric gynaecology

Special issue
P5–9 >

ESPE 2023 in The Hague – submit your abstracts by 24 April!

Welcome

This issue of *ESPE News* is bursting with opportunities. The first is the chance to submit your abstracts to the 61st ESPE Annual Meeting, which takes place in The Hague, The Netherlands, in September. The abstract submission deadline is 24 April (see page 3): it's time to get writing, so that we can all share our latest discoveries.

The next is a gentle reminder to renew your membership, if you haven't already done so, to continue to receive the many benefits that being a member of ESPE brings. If you are an early career member, you should also sign up for the new YES Group, to support your career development.

On **page 3**, you will find even more chances to have your say or to immerse yourself in our field. Importantly, it's time to make suggestions for the programme of the 2024 ESPE Annual Meeting, in Liverpool, UK. Who would you like to hear? What would you like to discuss? Send your ideas by 31 March.

The closing dates for applications to the ESPE Diabetes, Obesity & Metabolism School and the ESPE Summer School are fast approaching too. **Page 3** is also the place to find out more about these, and your chance to host and choose the topic of the 2024 ESPE Science Symposium.

This issue's theme is paediatric and adolescent gynaecology. Mette Viuff and Claus H Gravholt open the discussion with insights into ovarian failure in Turner syndrome, on **page 5**. As well as examining the role of genetics, they discuss treatment and the future possibility of fertility preservation.

On **page 6**, Preeti Dabadghao looks at the issues associated with diagnosing polycystic ovary syndrome (PCOS), the most common endocrine disorder among women of reproductive age. She reflects on the fact that many features of normal puberty overlap with those of PCOS.

Delayed puberty is seen in more than 2% of adolescents and, on **page 7**, Sasha Howard looks at the range of genes involved in its aetiology. She contemplates a future where gene testing may help the diagnostic process.

Gail Busby and Mars Skae have established a very successful paediatric and adolescent gynaecology service in Manchester, UK. On **page 8**, they tell us how and why they established the service and the advantages it provides.

Find out more inside...

Sarah Ehtisham
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Cover image:
Illustration of ovary and fallopian tube (magicmine/iStock)

YOUR SOCIETY

Renew your membership – and benefit

Remember to renew your ESPE membership now, to retain access to all these opportunities:

- reduced registration fees for the ESPE Annual Meetings
- eligibility to apply for a larger number of grants, awards and fellowships
- interactive learning through education and training programmes
- recognition of your achievements, through our prestigious awards
- reduced price subscription to *Hormone Research in Paediatrics*
- your right to vote for the leaders of your Society
- networking opportunities through ESPE events and the online members' directory
- the latest paediatric endocrinology news delivered straight to your mailbox, and via our social media accounts.

Log in to your membership profile using your email address. You must reset your password before logging in, if you haven't already.

Reset your password at **https://membership.eurospe.org/general/email_pass.asp**

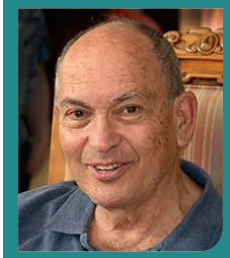
Encourage your colleagues to join ESPE! See **www.eurospe.org/members/membership-overview**

Join the YES Group

The new Young ESPE (YES) Group supports young paediatric endocrinologists. This dynamic group of early career ESPE members provides a space for personal growth, through access to professional development, collaboration and research opportunities. YES Group representatives sit within ESPE's main committees, giving early career members a voice throughout ESPE.

Join today at **www.eurospe.org/about/organisation/yes-group**

IN MEMORIAM



Ze'ev Hochberg

We are saddened by the passing of Ze'ev Hochberg, an eminent paediatric endocrinologist who played an active role in ESPE. He was a past recipient of the Andrea Prader Prize, and founder and Editor of the ESPE *Yearbook of Paediatric Endocrinology*.

Nathalie Josso

It is with regret that we also report the death of Nathalie Josso, INSERM Research Director and paediatrician. She was an active member of ESPE and was awarded ESPE's Andrea Prader Prize in 1992. She will remain a great name in medical and scientific research.

You can read their full obituaries at **www.eurospe.org/about/announcements/obituary**

EVENTS

61st Annual ESPE Meeting
Global challenges in paediatric endocrinology

The Hague, The Netherlands
21–23 September 2023

Submit your abstracts now!

Abstract deadline **24 April 2023, 23.59 BST**

Submit abstracts at **https://auth.oxfordabstracts.com/?redirect=/stages/5528**

Register your interest in ESPE 2023 at **www.eurospe.org/event/61st-espe-meeting**


vichie81/Shutterstock

Send your ideas for the ESPE 2024 programme

Help shape the ESPE Annual Meeting in 2024, by making suggestions for the programme. All ideas will be sent for discussion at the first Programme Organising Committee meeting.

Please note:
- speakers and topics cannot be repeated
- we discourage self-nomination
- the POC may alter suggestions at its discretion.

Send your suggestions by **31 March 2023**

Submit them at **www.eurospe.org/event/62nd-espe-meeting**

Could you host the ESPE Science Symposium 2024?

Host the ESPE Science Symposium and help reduce the gap between research and patient care by disseminating new scientific knowledge in the paediatric endocrinology community.

Apply by **1 April 2023**

Find out more and apply at **www.eurospe.org/education/ espe-science-symposium/science-symposium-2024**

Apply for ESPE schools

Don't miss your chance to apply for the following ESPE schools!

ESPE Diabetes, Obesity & Metabolism School 2023

This popular school provides up-to-date teaching and promotes interaction between young physicians and senior paediatric endocrinologists. It takes place on 24–26 September in Rockanje, The Netherlands, immediately after ESPE 2023 in The Hague.

Apply by **15 April 2023**

See **www.eurospe.org/education/espe-schools/diabetes-obesity-and-metabolism-school**

ESPE Summer School 2023

The ESPE Summer School provides senior trainees with updates in selected areas of paediatric endocrinology. It will be held in Rockanje, on the Dutch coast, on 18–20 September 2023, just before ESPE 2023 in The Hague.

Apply by **15 May 2023**

See **www.eurospe.org/education/espe-schools/summer**

Find out more about ESPE events on PAGE 9

RESOURCES

Expand your mind with e-Learning

The ESPE–ISPAD e-Learning web portal is a free, interactive tool to support education in paediatric endocrinology and diabetes mellitus. It includes over 200 learning modules. Take advantage of it today, simply by registering at the website.

Register for free access at **www.espe-elearning.org**

This issue's clinical case highlight

A girl with delayed menarche: Anna, 17 years old, is very concerned because she has no periods. Physical examination reveals a healthy-looking girl, normal height and weight, normally proportioned, in puberty (B3, P5, A3), no dysmorphic features, no acne, no chronic disease.

Which of the following differential diagnoses do you consider?

- ☐ Constitutional late puberty
- ☐ Hyperprolactinaemia
- ☐ Pituitary disorders: space-occupying lesions
- ☐ Chromosomal disorders

For the answer, see **page 9**.

Bringing you recent highlights from the world of research

Tyrosine hydroxylase in β-cell heterogeneity

Pancreatic β-cells display molecular and functional heterogeneity. Unique subpopulations are associated with specific developmental and pathophysiological contexts, to ensure adaptation to changing physiological demands. Despite their essential role, our understanding of the mechanisms underlying β-cell heterogeneity is limited.

Parveen *et al.* have shown that a subset of β-cells co-express insulin and tyrosine hydroxylase, an enzyme well known for its role in catecholamine production in sympathetic neurones. Since catecholamines inhibit insulin secretion, mouse strains with increased numbers of tyrosine hydroxylase-positive β-cells have blunted insulin secretion.

The authors demonstrate that DNA methylation establishes and maintains the restriction of tyrosine hydroxylase expression during and after the transition from endocrine progenitors to β-cells. They show that loss of tyrosine hydroxylase promoter methylation leads to increased expression of tyrosine hydroxylase and altered β-cell identity in response to chronic overnutrition. This study establishes a crucial role for DNA methylation patterning in endocrine lineage determination towards generation of β-cell heterogeneity.

Read the full article at Parveen *et al.* 2023 *Diabetes* doi: 10.2337/db22-0506

Once-weekly semaglutide in adolescents with obesity

Weghuber *et al.* conducted a multi-centre, double-blind, randomised controlled trial to assess a 2.4-mg dose of once-weekly subcutaneous semaglutide, a glucagon-like peptide-1 receptor agonist, in adolescents who were overweight or had obesity.

Of the 201 participants who were randomised, 180 (90%) completed treatment with either semaglutide or placebo, plus lifestyle intervention. At week 68, there was a significant difference between the mean change in body mass index (BMI) from baseline seen with semaglutide compared to that seen with placebo (–16.1% versus 0.6%, $P<0.001$). In addition, greater reductions in body weight and improvements in cardiometabolic risk factors were observed with semaglutide compared with placebo. Gastrointestinal side effects were more common in the semaglutide group.

The authors conclude that semaglutide with lifestyle intervention results in clinically relevant reductions in BMI and body weight compared with lifestyle intervention alone, with no new safety concerns identified.

Read the full article at Weghuber *et al.* 2022 *New England Journal of Medicine* **387** 2245–2257

Liraglutide in Prader–Willi syndrome with obesity

A randomised controlled trial was conducted at 20 different sites to determine the efficacy and safety of liraglutide, a glucagon-like peptide-1 receptor agonist for weight management. It was compared with placebo or no treatment in paediatric patients with Prader–Willi syndrome (PWS).

The study subjects were adolescents (n=31, aged 12–17 years, Tanner stage 2–5) and children (n=24, aged 6–11 years, Tanner stage <2) with PWS and obesity. They all followed a structured diet and exercise regime throughout the study period. They were randomised 2:1 to liraglutide 3mg or placebo for 16 weeks, after which the placebo group was stopped, and the drug group continued for 52 weeks.

Authors Diene *et al.* concluded that liraglutide did not result in a significant reduction in body mass index SDS when compared with the placebo/no treatment groups, as an adjunct to the diet and exercise regime. However, they did observe an improvement in hyperphagia in adolescents.

Read the full article at Diene *et al.* 2023 *Journal of Clinical Endocrinology & Metabolism* **108** 4–12

Cryptorchidism and markers of testicular function

Rodprasert *et al.* report a longitudinal case-control study with prospective follow up of pubertal hormone levels in 46 boys with cryptorchidism, compared with 63 control boys. Of 30 boys with unilateral cryptorchidism, 15 had orchidopexy and 15 had spontaneous testicular descent. Among 16 boys with bilateral cryptorchidism, 9 had orchidopexy and 7 had spontaneous testicular descent. None received hormonal therapy for cryptorchidism. They were assessed hormonally every 6 months from 8.5 years of age for 14 years.

Boys undergoing bilateral orchidopexy had higher follicle-stimulating hormone (FSH) and lower inhibin B than controls after onset of puberty, while those undergoing orchidopexy for unilateral cryptorchidism had high FSH levels but normal inhibin B. The boys with bilateral cryptorchidism had smaller testicular volumes after onset of puberty. FSH and inhibin B are markers of Sertoli cell mass and function, implying that the boys with cryptorchidism predominantly have Sertoli cell dysfunction. Germ cells are the main contributor to testicular volume in later puberty, so the reduced volume also implies reduced germ cell number. There were no differences in testosterone, luteinising hormone or insulin-like peptide 3, implying preserved Leydig cell function.

This study supports findings in adult males with a history of cryptorchidism, and improves our understanding of the pathophysiology.

Read the full article at Rodprasert *et al.* 2022 *Journal of Clinical Endocrinology & Metabolism* **107** 3353–3361

Turner syndrome: genomics, sex hormones and fertility

Our understanding of ovarian failure in Turner syndrome has evolved, as Mette Viuff and Claus H Gravholt explain.

Mette Viuff

Claus H Gravholt

> *"The majority of girls with TS probably reach 'menopause' during childhood or early adulthood"*

Hypergonadotrophic hypogonadism is a consistent trait in 95% of females with Turner syndrome (TS). A diagnosis of TS used to equate to a life with infertility – a detrimental factor affecting quality of life in these patients.[1] In recent years, new possibilities for assisted reproductive techniques have become available. Furthermore, genetic research towards understanding the basal development and origin of ovarian failure has evolved.

Genomics

X chromosome monosomy and infertility are undoubtedly intertwined. Candidate genes on the X chromosome that have particularly been suggested as contributing to ovarian function in TS include *KDM6A*, *USP9X*, *ZFX* and *BMP15* (see Figure).

KDM6A (a histone demethylase) is involved in gonadal dysgenesis, re-establishment of pluripotency and germ cell development. This gene is both differentially expressed and methylated in TS.[2] Haploinsufficiency is associated with altered histone modifications potentially affecting transcriptional regulation of genes central to reproduction. *USP9X* escapes X inactivation and is a ubiquitin-specific protease. Disturbances of *USP9X* are considered a plausible mechanism, since the *Drosophila* orthologue of *USP9X* is required for eye development and oogenesis. *USP9X* is differentially methylated in TS.[2] *ZFX* is a DNA-binding gene, which acts as a transcriptional factor, and knockout of this gene in mice is related to a decreased number of germ cells. *ZFX* is differentially expressed in TS.[3] *BMP15* encodes bone morphogenetic protein 15, which stimulates synthesis of anti-Müllerian hormone (AMH) and folliculogenesis and is expressed in the oocyte.

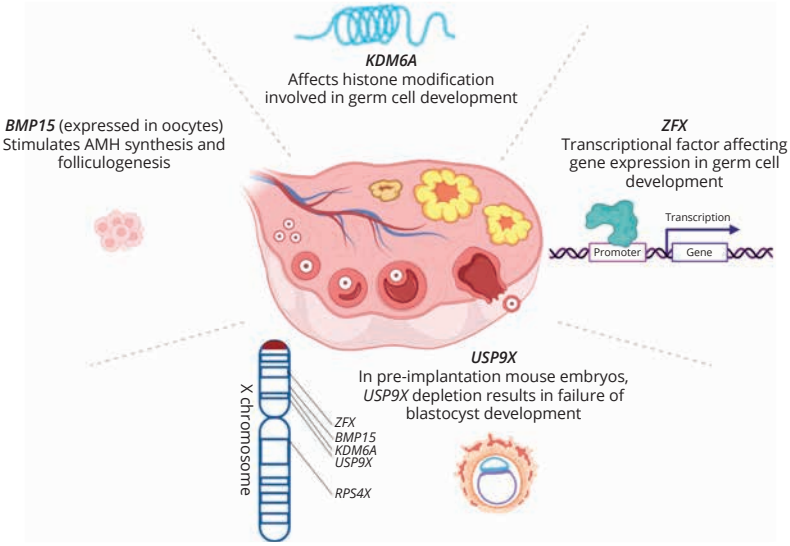


Figure. *Genes on the X chromosome which may be involved in the infertility of TS. Reproduced under CC BY 4.0 licence (https://creativecommons.org/licenses/by/4.0) from Viuff & Gravholt[7] https://doi.org/10.1016/j.ando.2022.06.001 ©2022 The Authors.*

Sex hormones

One condition for achieving pregnancy is completion of puberty with maturation of both ovaries and the uterus. Most girls and women with TS undergo premature ovarian failure during childhood or early adolescence, before sufficient pubertal maturation.

According to international guidelines, girls with TS should be treated with oestrogen from the age of 11–12 years.[4] Besides ensuring uterine growth, oestrogen has a wide range of beneficial effects across the entire body and receptors are present in most tissues.

Testosterone is also reduced in TS, and androgens might affect follicle maturation at early stages. A new study illustrates that testosterone levels are reduced by more than 50% in comparison with young females with a normal menstrual cycle. Although patients with TS received hormone replacement therapy (HRT) at the recommended doses, the level of oestradiol was much lower than among controls, pointing towards a need to reassess what we consider sufficient HRT among adults with TS.[5] Should we give a higher dose of oestradiol and should we also add testosterone in the future?

Fertility

Normally, formation of germ cells and oocytes begins shortly after sexual differentiation at week 6, reaching a maximum of up to five million germ cells by weeks 8–12. In TS, the tipping point of germ cell creation and depletion occurs at the same time as in eukaryotic women, but at a much more accelerated speed.

Both oogenesis and folliculogenesis are compromised in subjects with TS. In ovaries from 45,X fetuses with TS, oogonia were observed, but with no occurrence of primordial, preantral or antral follicles when compared with eukaryotic fetal ovaries, and connective tissue predominates in the ovaries. Thus, the majority of girls with TS probably reach 'menopause' during childhood or early adulthood.

Therefore, the possibility of using ovarian tissue cryopreservation (OTC) to retain fertility in women with TS is speculative. This technique can be used across a broad age range (from 2 years and up) and independently of pubertal stage. The disadvantage is that it requires a surgical procedure to be performed, preferably in young children. OTC has led to live-born children in survivors of cancer. However, in TS, the procedure remains experimental. So far, OTC has been performed in a cohort of women with TS from Denmark, Canada and the Netherlands,[6] but no live-born children have been reported so far.

Perhaps, in the future, we will be able to preserve a high number of fetal TS oocytes before ovarian function begins to diminish.

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PCOS in adolescence: challenges in diagnosis

Preeti Dabadghao examines factors for consideration in diagnosing this common endocrine disorder.

Polycystic ovary syndrome (PCOS) is the commonest endocrine disorder of women of reproductive age, affecting between 3.4 and 20%, depending on the criteria used for diagnosis. The onset is usually peripubertal. Menstrual irregularities, oligo- or anovulation, hyperandrogenism (HA) in the form of hirsutism, acne, androgenic alopecia and infertility are the main clinical features.

PCOS is a heterogenous disorder with no clear aetiology, but insulin resistance and the resulting hyperinsulinism are central to its pathogenesis. Obesity is a common association and may unmask clinical features. Insulin resistance and obesity in PCOS confer a high risk of future development of dyslipidaemia, hypertension, and abnormalities of glucose tolerance: all risk factors for cardiovascular diseases. This makes it necessary to diagnose PCOS as early as possible.

Preeti Dabadghao

> *"There is a significant overlap between the features of PCOS and those of normal puberty"*

Diagnosis

Diagnosis of PCOS is clinical, and all secondary causes of HA or oligo-/anovulation should be excluded by appropriate tests. Diagnosis in adolescents is difficult because of the significant overlap between clinical features in PCOS and normal changes during puberty. Adolescents are diagnosed as having PCOS only when *both* menstrual irregularities *and* clinical and/or biochemical HA are present, as emphasised by the International PCOS Network.[1]

Some of the main features – HA, menstrual irregularity and polycystic ovarian morphology – are detailed below.[2–5] There is no role for measuring gonadotrophins, anti-Müllerian hormone or insulin, or calculating insulin resistance index, in the diagnosis of PCOS.

Hyperandrogenism

HA is the key clinical feature. Hirsutism, acne and irregular cycles are common features of HA in adolescents, while alopecia and virilisation are rare.

Hirsutism is the growth of terminal hair in androgen-dependent areas. It should be differentiated from hypertrichosis, which is overgrowth of vellus hair in non-androgen-dependent areas. Hirsutism is scored by the modified Ferriman–Gallway score; a score above 6 is significant. There is variation according to age and ethnicity.

Adolescents with inflammatory or treatment-resistant acne should be evaluated for HA.

Biochemical HA is documented by measuring serum levels of total testosterone, free testosterone, dehydroepiandrosterone sulfate or androstenedione, or by calculating the free androgen index (FAI). Liquid chromatography–tandem mass spectrometry is the gold standard for measurement of all steroids, but is expensive and not widely available. There is no absolute value of testosterone or FAI above which HA can be diagnosed. Serum testosterone above the normal female range is considered raised. For FAI, a normal range has to be generated for each laboratory.

Menstrual irregularity

Irregular cycles are common at menarche and in the first year post-menarche. Cycle length varies between 20 and 90 days; rarely girls have a cycle >90 days. After 3 years, nearly 90% of girls have regular cycles.

Girls should be evaluated for the possibility of PCOS if they have:

- a cycle length >90 days in the first year after menarche
- menstrual intervals <20 days or >45 days at 2 years post-menarche
- consecutive cycle lengths >90 days regardless of the years post-menarche, or
- primary amenorrhoea despite having attained final height and pubertal development.

Polycystic ovarian morphology

Polycystic ovarian morphology (PCOM) is characterised by documentation via transvaginal ultrasound of ovarian volume >10ml in one of the ovaries, or the presence of more than 12 follicles 3–9mm in size, arranged peripherally, in the absence of a dominant follicle.

There are limitations associated with using PCOM for the diagnosis of PCOS. Transvaginal ultrasound cannot be performed in girls who are not sexually active. The volume of the ovary increases with pubertal development and is maximum at menarche. Ovaries in normal healthy adolescents may have a multi-follicular pattern, defined as more than six follicles 4–10mm in size distributed throughout the ovary; this is not associated with HA.

'At risk' individuals

All those adolescents in whom a diagnosis of PCOS cannot be established but who have one or other feature of PCOS should be labeled 'at risk'. These adolescents need a regular longitudinal follow up, as other features of PCOS may evolve over a period of time.

Misdiagnosis of PCOS may lead to overtreatment, anxiety and distress. Conversely, if adolescents who are 'at risk' are discharged from the clinic as normal or are lost to follow up, a golden opportunity is lost to evaluate and affect co-morbidities. A fine balance has to be maintained between diagnosing and over-diagnosing PCOS.

Key messages

- There is a significant overlap between the features of PCOS and those of normal puberty. Hence a diagnosis of PCOS should be made when both menstrual irregularity and clinical or biochemical HA are present.
- Secondary causes of oligomenorrhoea and HA should always be ruled out.
- It is important to identify 'at risk' adolescents and follow up for evolution of PCOS.
- Currently accepted diagnostic criteria for PCOS in adolescents do not include PCOM, serum levels of anti-Müllerian hormone, gonadotrophins or markers of insulin resistance.

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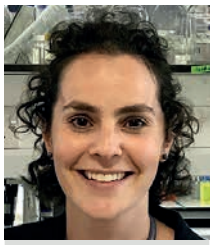
Genetics of delayed puberty

A strong genetic aetiology means that gene testing may aid diagnosis, as Sasha Howard describes.



Sasha Howard

> *"Clinical presentations of delayed puberty are often found with clear patterns of inheritance"*

Delayed puberty is a common paediatric endocrine condition which affects more than 2% of adolescents. Clinical presentations of delayed puberty are often found within multiple generations of the same family, with clear patterns of inheritance, pointing to distinct genetic determinants. Self-limited or isolated delayed puberty (also known as constitutional delay in growth and puberty) is found with a positive family history in 50–75% of patients.

Results of comprehensive genome-wide association studies (GWAS) of age of menarche in women suggest that a large number of different genetic signals play a role in the range of pubertal timing that is observed in the general population.[1] The signals identified to date explain ~7.4% of the population variance in age at menarche, corresponding to ~25% of the estimated heritability, and many have concordant effects on the age at voice breaking, a corresponding milestone in males.

Factors in diagnosis

The discovery of the underlying genetic regulators of delayed puberty, in recent years through high throughput sequencing, has advanced our understanding of the pathogenesis of disorders of pubertal timing.

For delayed or arrested puberty due to primary gonadal disorders, such as Turner or Klinefelter syndrome, karyotyping is the principal diagnostic test, although follow-up microarray or sequencing may be required.

It is important to distinguish self-limited delayed puberty from congenital hypogonadotrophic hypogonadism (CHH) or Kallmann syndrome (CHH with anosmia), which are pathological conditions with failure to progress through puberty and usually need intensive hormonal therapy. Both conditions may present with a similar clinical phenotype of delayed puberty with low gonadotrophins, and in females the classic 'red flag' signs of CHH, such as micropenis and cryptorchidism, are absent.

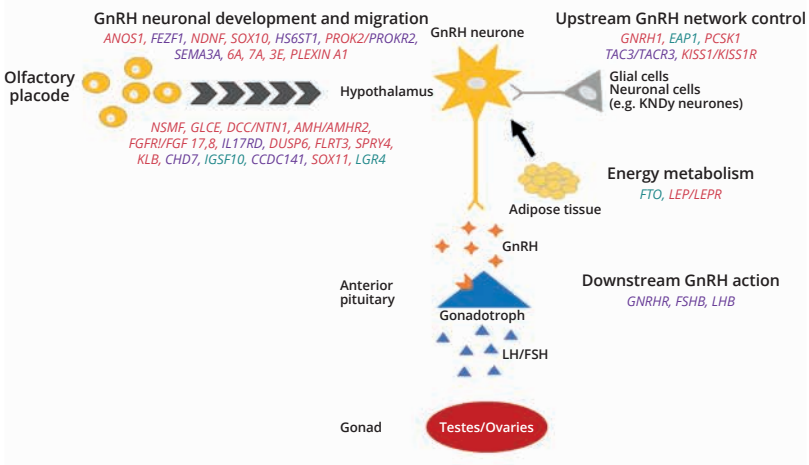


Figure. *Genes identified in central delayed puberty (CHH, Kallmann syndrome and self-limited delayed puberty) are mainly related to GnRH biology, as indicated here. Red text: genes implicated in the aetiology of CHH or Kallmann syndrome; green text: those in self-limited delayed puberty; purple text: those in both CHH/Kallmann syndrome and self-limited delayed puberty. Gene lists are not exhaustive. KNDy, kisspeptin/neurokinin B/dynorphin. Reproduced by permission from Saengkaew & Howard 2020[7] in adapted form.*

Contributing genes

To date, over 50 genes affecting the hypothalamic-pituitary-gonadal axis are known to contribute to the pathogenesis of CHH, ranging from classic genes such as *ANOS1* and *FGFR1* to recently identified *NDNF*.[2] Up to 15% of patients with CHH have been reported to carry multiple deleterious variants in an oligogenic inheritance pattern.

More than 15 genes involved in the aetiology of self-limited delayed puberty have been identified, including those found in relatives of CHH probands and others identified from large cohorts of familial self-limited delayed puberty, which have been extensively studied *in vitro* and *in vivo*. The majority of these genes have functions related to gonadotrophin-releasing hormone (GnRH) biology (see Figure), including regulation of GnRH neuronal development and migration (*IGSF10*, *LGR4*, *CCDC141*), GnRH upstream control (*TAC3*, *TACR3*), GnRH downstream action (*GNRHR*), and energy metabolism (*FTO*).[3]

Diagnostic genetics

Whilst there is some overlap in the genetic background of these conditions, the majority of mutations are distinct between the two diseases.[4] Therefore, diagnostic genetics can potentially be utilised to assist a clinician in distinguishing those adolescents with severe GnRH deficiency from those with self-limited delayed puberty. This, in turn, will allow delivery of accurate and timely treatment to patients. Moreover, it can be helpful to facilitate appropriate counselling on the likelihood of inheritance within families and for individuals undergoing fertility treatment.

This is supported by a recent study of the use of targeted exome sequencing to aid the differential diagnosis between CHH and self-limited delayed puberty in adolescents presenting with severe pubertal delay.[5] Gene panels, or whole exome sequencing with 'virtual' gene panels, are increasingly available for testing in adolescents and young adults with severe delayed puberty in the clinical setting.[6]

Sasha R Howard
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Setting up a paediatric gynaecology service

Gail Busby and Mars Skae tell us about their experience, establishing a very successful paediatric and adolescent gynaecology service in Manchester, UK.

Gail Busby

Mars Skae

> *I was extremely lucky to have such motivated and skilled colleagues who were happy to become part of the service"*

Please tell us about yourselves

Gail: I am a consultant gynaecologist with a special interest in paediatric and adolescent gynaecology. This makes me well placed to run this service, as I can follow patients from childhood, through puberty and into adulthood, if necessary. This allows me to forge long-term clinical relationships with patients. I set up the tertiary referral service for paediatric and adolescent gynaecology in 2009, when I was appointed as a consultant in Manchester.

Mars: My role in the complex gynaecology and differences of sexual differentiation (DSD) transition clinic is as a transition endocrinologist. Having known most of the patients during their paediatric years provides continuity of care. I also advise on aspects of hormonal replacement, particularly in cases such as those with congenital adrenal hypoplasia, and engage with complex discussions around new diagnoses of DSD.

What shaped the service?

G: I originally ran the service single-handedly, but soon recognised the need for multidisciplinary support for complex cases. I then assembled the multidisciplinary team, including paediatric endocrinology, reproductive medicine, psychology, dilation therapy and paediatric urology. The colocation of Royal Manchester Children's Hospital with Saint Mary's Hospital was an ideal situation in which to set up such a service, as joint working was logistically not too much of an issue. I was extremely lucky to have such motivated and skilled colleagues who were happy to become part of the service.

M: Gail and I recognised a need among adolescents and young women who were moving on from paediatric services. Management of their hormonal replacement and provision of a complete holistic package for these individuals (with Turner syndrome, congenital adrenal hyperplasia, DSD, some Mayer–Rokitansky–Küster–Hauser syndrome and cloacal anomalies) necessitated the development of a service. It aims to provide lifelong support for those who may have issues at different times in their lives, and patients can always be referred back into the service if necessary, after they are discharged to the care of their primary/local provider.

How did you create a joint service?

G: I contacted the various members of the current team, who were all willing to be involved. From that point, there were negotiations to include clinics in various job plans and discussions around funding. The need for the clinic was obvious and, as a Trust, we always aspire to deliver gold-standard care for our patients, so the management were also supportive. Clinic space and time were then explored and allocated. Finally, I contacted primary and secondary care providers in Greater Manchester to raise awareness of the service. It took a significant amount of time and effort (as does every worthwhile undertaking), but it has been worth every minute, in order to be able to deliver the service we have today.

How does the service operate?

M: We have a joint, monthly, multidisciplinary clinic, with input from the perspectives of gynaecology, endocrinology, psychology and fertility medicine, including a specialist nurse who can address concerns around sexual intimacy and intercourse. The service runs at a local community-based health centre, which ensures a non-threatening environment that is not highly medicalised.

G: Clinics are arranged into 'themes' for different conditions, in order to improve efficiency and to better cater for the needs of particular groups of patients. Further input (e.g. paediatric urology, genetics) is arranged on an ad hoc basis.

How have patients responded?

M: Having the joint service ensures better patient care and patients feel that they can address several concerns

Continued on page 9

Recalling a special patient

Although all the patients in this service are special and have their own stories to tell, one particular patient comes to mind. She was born with a complex genital and pelvic anomaly, and had extensive surgery shortly after birth. We met when she was a young adult. I was immediately impressed by her on our first meeting. She was outgoing, loved to travel and was exceptionally kind. She did not let her condition slow her down.

We eventually spoke about the theoretical possibility of child-bearing. I went through her old notes in detail, and said that I was cautiously optimistic, although there were likely to be challenges. Some time later, she told me that she had met someone. She had always declined psychology input. I encouraged her to meet with the psychologist to discuss issues around disclosure to her partner. She said that she would go, if I went with her. We attended the appointment together. The next time I saw her, she had told her boyfriend and it had all gone fine (as she said it would).

After some time, they got married and, again, we discussed pregnancy. I arranged preconception counselling. They decided to try, and she became pregnant quite quickly. She let me know right away. An early scan was arranged to exclude an ectopic pregnancy, due to her previous surgeries. All was well! She had close monitoring throughout her pregnancy.

She was delivered of a beautiful baby girl. I was the first person to hold her, as I took part in her Caesarean section. It was my first section for 9 years, but there was no way I would not be there! That was 4 years ago. I still do her smear tests. Every so often, I get sent pictures of the lovely little girl.

This story typifies the work we do and the special relationship that exists. I feel so lucky to be a part of this fantastic service.

Gail Busby

'Setting up a paediatric gynaecology service' *continued from page 8*

> *This is definitely a worthwhile endeavour, because it benefits patients significantly"*

in one setting in a more holistic fashion. Some patients, who are extremely distressed about their condition, can also resolve long term concerns and issues in a joint setting, where there is multidisciplinary provision. Access to paediatric records means we can fill gaps in patients' knowledge, if required.

G: I didn't foresee how much patients would value the service and that, when they are due to be discharged to primary care, it would often be a difficult decision; they feel so well supported that they wish to remain with us. It is also a wrench for us to discharge them after building a supportive relationship, often over several years, through the teenaged years into adulthood.

What are your plans for the future?

G: We have recently expanded, but still have a long waiting list. Further expansion seems inevitable.

M: The numbers in the service have gradually grown over the years. We had to recruit a second gynaecologist and a clinical fellow, as we try to get through the waiting list. It is important to have clear frameworks around the discharge of patients who have been seen and have a full care package that doesn't require further intervention.

What advice would you offer others about setting up a similar service?

G: Do it! Network with colleagues and meet with managers. Visit services in other hospitals to get ideas. Be open-minded and start small. It will grow over time, and faster than you imagined.

M: This is definitely a worthwhile endeavour, because it benefits patients significantly. We would encourage centres with adequate expertise to try to do so.

Is there anything else you would like to add?

G: I thank all my colleagues who have come on this journey with me and had the faith to become involved in the service. I also thank the patients who have been so accepting, supportive and encouraging. It is their feedback and honest communication which guided the various improvements over the years. We still strive for further improvement.

ESPE e-Learning

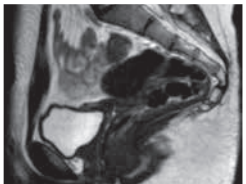
Answer to the case query on **page 3**

What is Anna's diagnosis?
Hyperprolactinaemia

Laboratory testing revealed mild hyperprolactinaemia, prolactin 0.9IU/l (normally <0.5), oestradiol <28nmol/l (50–250), testosterone 1.2nmol/l (0.5–2.5), luteinising hormone 27IU/l (1–7), follicle-stimulating hormone 120IU/l (1–6), thyrotrophin 1.1mU/l (1–4), free thyroxine 13pmol/l (11–27), leading to the diagnosis of hypergonadotrophic hypogonadism. Anti-Müllerian hormone was 0.1µg/l (2–30), karyotype was 46,XX. Ultrasonography and magnetic resonance imaging (MRI) of the internal genitalia showed a very small uterus (volume 2.5ml, normally 23ml; see Figure).

The diagnosis of premature ovarian failure was established and explained to Anna and her parents. She was started on 17β-oestradiol 2mg/progestagen with regular withdrawal bleedings. Primary amenorrhoea beyond the age of 15 years warrants further diagnostic investigations.

For further reading, login to **www.espe-elearning.org** and find Anna's case in the Puberty section.


MRI transverse section of pelvis

Future meetings

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21–23 September 2023
The Hague, The Netherlands
www.eurospe.org/event/61st-espe-meeting


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62nd Annual ESPE Meeting
November 2024
Liverpool, UK
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64th Annual ESPE Meeting
September 2026
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19 April 2023

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7 June 2023

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11 October 2023

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13–14 October 2023
Athens, Greece

13th ESPE Connect Webinar: Diagnostics
3 December 2023

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APRIL

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ESPE Research Unit final applications – 20 April 2023

ESPE 2023 abstract submissions – 24 April 2023

MAY

ESPE Summer School 2023 applications – 15 May 2023

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ESPE
European Society for Paediatric Endocrinology

Improving care of children with endocrine diseases by promoting knowledge and research

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