



King Saud University
College of Medicine
Department of Medical Education

“AM I DIFFERENT?”

Tutorial TWO

Year Two, Reproduction System Block

Curriculum Development Unit

Student's Case

Case 1; 2014

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The Template of the PBL Cases is designed by Professor Samy A. Azer.

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Tutorial 2: Discussion of Learning Issues

(60 minutes)

Students: You should start by discussing your “learning issues” that you have identified at the end of tutorial one. You might spend about **60 minutes** on this task. A scribe on the whiteboard is needed to help in this process.

Once you have completed the discussion of your “learning issues”, you might progress to these questions. Spend about **10 minutes** on discussing them in your group. A scribe on the whiteboard will help in this process.

Discussion Questions:

- On the basis of the information provided in tutorial one, what is your final hypothesis? Justify your views?
- What should Dr Mona do at this stage?



- Do you know a Nobel Prize laureate whose work has contributed to the advancement of our knowledge in physiology and/or pharmacology related to this case? What was exactly his/her work about? Give a summary.

Student: You could also after the completion of this case submit your work about the Nobel Prize laureate for this case to Professor Samy Azer at (sazer@ksu.edu.sa) or hand it to him.

Dr. Mona explains to Lila and her mother that Lila might have a little delay in her puberty. She says, " Puberty is the period where girls experience changes in their bodyweight, body shape, and the growth of their breasts as well as the appearance of hairs in their armpits and in between their legs (pubic area). It is also the time where a girl starts her monthly periods". She adds, "Lila's body has shown some changes and she is in the early stages of puberty. There are many factors that can affect the onset of puberty such as severe stress, family history of delayed puberty, and loss of bodyweight. Clinically there is nothing wrong with Lila". Dr. Mona asks Lila to review in four months for further check up if she did not have her period.

Six months later, Lila comes with her mother. Examination reveals that Lila has some changes in her breasts and more hair in her axilla and pubic area but she still hasn't had her first period yet.

Discussion Questions

- On the basis of information provided in this progress, what do you expect the cause of her problem? Explain your views.
- What should Dr. Mona do at this stage?

Because Lila and her mothers were worried, Dr Mona decides to order some blood tests. The results of these investigations are shown in the tables below:

Full blood count

Blood Test	Lila	Normal range
Haemoglobin (Hb)	13 g/100ml	11.5-13.5 g/100ml
White blood cell count	6,000 mm ³	5,000 -10,000 mm ³
PCV	42 %	37-47%
MCV	85 fl	80-96 fl
MCHC	320 g/L	300-350 g/L
Platelet count	240,000 mm ³	160,000-500,000 mm ³

Hormonal assays

Test	Lila	Normal range
Serum follicle stimulation hormone (FSH)	2.4 IU/L	3-12 IU/L
Serum luteinizing hormone (LH)	3.6 IU/L	5-18 IU/L
Growth hormone (GH)	1.8	0-3 ng/mL
Serum estradiol	18 pmol/L	37-143 pmol/L
Serum testosterone	12 pmol/L	9,9-27,8 pmol/L
Serum prolactin	150 mIU/L	75-511 mIU/L

Thyroid function tests

Test	Lila	Normal range
Total thyroxine T4	104	65-155 nmol/L
Triiodothyronine T3	1.8	1.1-2.9 nmol/L
TSH	2.3	0.4-5 mU/L

Chromosomal studies:

A chromosomal analysis is normal

Discussion Questions:

- Are there any terms that you do not understand?
- Summarize the key information that you have obtained from this progress.
- What is your interpretation of these investigations?
- On the basis of the new information, how would you explain Lila's presenting problem, and the clinical findings?

Dr Mona discusses the results of the investigations with Lila and her mother. She assures Lila by saying, "Lila there is nothing wrong with your body." The blood levels of the hormones measured (FSH, LH, and estradiol) are low because of the lack of stimulation from the hypothalamus and hence the anterior pituitary and the ovaries. Other hormones such as prolactin and thyroxine are within the normal range. The uterus and ovaries are normal and the chromosomal analysis results are normal for a female. The clinical examination and the ultrasound examination of the pelvis are normal. Taken together, these findings match with delayed puberty. The delay in the stimulation of the hypothalamus is within normal. We expect that within the next 4 to 6 months Lila will have her first period. This will take place as the stimulation of the hypothalamus causes an increase in the blood levels of FSH and LH and hence the stimulation of the ovaries. As a result the ovaries will secrete oestrogen and progesterone. With these hormonal changes, the lining of the uterus undergoes periodic changes and hence the occurrence of menstrual period. Lila and her mother are very pleased to hear these news.

About 4 months later, Lila has her first period. She calls Dr Mona and shares with her the news.

Tutor's note:

In the last 10 minutes of the tutorial, you might encourage your group to discuss how they could work better as a group. What are the things they need to change and what things they need to improve? This discussion is very useful and will help the group to function better as they work on the next PBL case.

Challenging and Revision Questions

Tutors: Students could think about these questions on their own as they review the case. They might discuss their answers with their friends.

- Discuss the anatomy and the functions of the female reproductive system
- Explain the role of feedback mechanisms in the regulation of the ovarian and uterine functions.
- Discuss the physiological effects of oestrogen at puberty in females.

Learning Objectives:

On completion of this PBL package the students should be able to

- Link the structure and function of the different parts of the female reproductive system.
- Discuss the physiological basis and the role of the hypothalamic-pituitary-ovarian axis in the regulation of the ovarian and the uterine cycles.
- Discuss the biological changes and the physiological mechanisms underlying the occurrence of puberty.
- Discuss the biological effects of oestrogen and progesterone during female puberty.

- Discuss the anatomy of the female breast and the hormones involved in breast development and milk secretion. .
- Understand the role of anxiety and environmental factors in delaying puberty.
- Understand the differences between normal and abnormal body functions.