



King Saud University
College of Medicine
Department of Medical Education

**“... unexpected
outcomes”**

Tutorial TWO

Year Two, GASTROINTESTINAL & HAEMATOLOGY Block

Department of Medical Education

Student's Case

Case 2; 2013



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THIS COPY IS TO BE GIVEN TO STUDENTS IN YOUR GROUP AT THE BEGINNING OF TUTORIAL TWO. PLEASE DO NOT GIVE IT EARLIER.

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

The Student Case and Tutor Guide are created 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:

1. What is your final hypothesis? Explain why?
2. What could possibly be the mechanisms underlying his presenting problems?
3. What should the doctor do at this stage?



4. 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.

Investigations

(30 Minutes)

Dr Imam arranges for a few tests (liver function tests, colonoscopy, and CT- scan of the abdomen and chest). The results of Faisal's test results are shown in the tables below.

Liver Function Tests

Test	Patient	Normal Range
Serum bilirubin	4	0-19 $\mu\text{mol/L}$
Aspartate aminotransferase (AST)	34	0-40 IU/L
Alanine aminotransferase (ALT)	40	0-55 IU/L
Alkaline phosphatase (ALP)	50	0-120 IU/L
Gamma glutamyltranpeptidase (γ -GT)	29	0-50 IU/L
Serum albumin	40	35-50 g/L
Prothrombin Time	12 seconds	10-14 seconds

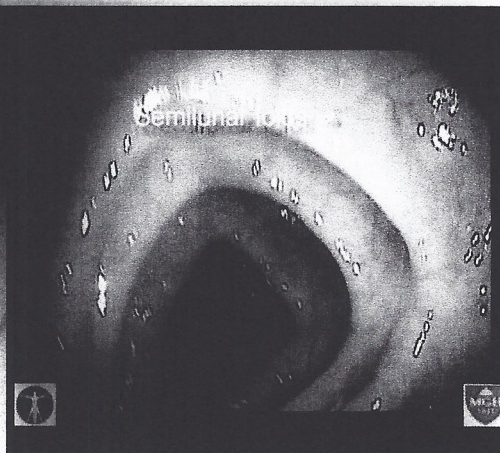
Colonoscopy

A normal colonoscopy image is shown also for comparison.

A) Faisal's colonoscopy



B) Normal colonoscopy



Source: http://www.hgu.mrc.ac.uk/people/m.dunlop_researchb.html

Report: A mass of about 5-6 cm in diameter is seen at the sigmoid region (about 20 cm from the anus). Its surface is irregular and shows multiple ulcers, necrotic and bleeding areas.

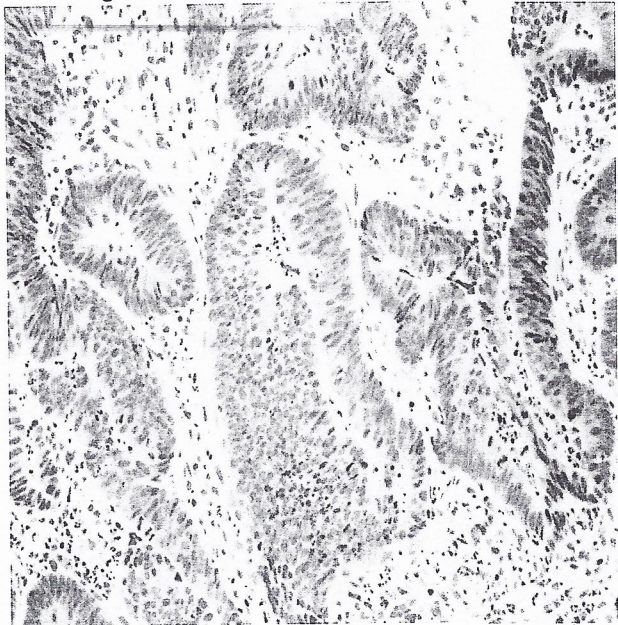
Histopathology

Sections from Faisal's colon mass

Low Power



High Power



Report:

Primary adenocarcinoma invading the wall of the colon. Sections show disturbance in the normal structure of the colon, presence of neoplastic epithelial cells and invading neoplastic epithelial cells. The high magnification shows that the neoplastic epithelial cells have abnormal cytological characteristics but are still forming rudimentary glands. There is a striking absence of goblet cells.

CT-Scan Abdomen

Report: a tumour mass occupying the sigmoid colon of approximately 5.5 cm is seen. Multiple metastatic masses are present in the draining abdominal lymph nodes. No metastases are noted elsewhere.

CT-Scan Chest

Report: Both lungs are clear. No noted.

Discussion Questions:

- Are there any terms that you do not understand?
- Summarize the key information that you have obtained from this progress.
- Refine your hypotheses and identify your most likely hypothesis.
- What is your management goals and your management options?

Progress 1

(30 Minutes)

Faisal comes in to see Dr Imam and discuss the investigation results. Dr Imam explains that he has a growth forming a tumour mass in the lower part of the large intestine. The investigations reveals that the tumour mass is about 5-6 cm in diameter and it extends into the lumen of the colon and interfere with the passage of stools during defecation, which explains the changes in Faisal's bowel habits to constipation for 2-3 days followed by loose bowel motions (because of action of colonic bacteria on the accumulated stools). The surface of the colonic mass also shows several bleeding area, which explains Faisal's bleeding per rectum and low haemoglobin levels.

Dr Imam discusses with Faisal the goals of management and available management options. He says, "the radiological images of the abdomen and the chest show that there are no tumour masses in the lungs or in the liver. Dr Imam adds, "After surgery, we will examine the resected parts of the colon, and the adjacent lymph nodes. If there is evidence of spread of cancer cells to the draining lymph nodes, chemotherapy is needed".

Dr Imam answers Faisal's questions and adds, "therefore the aims of the management are surgical resection of the malignant areas of the colon (colectomy) and because of the spread of the cancer cells to the abdominal lymph nodes, chemotherapy is needed after the surgery to kill cancer cells in the lymph nodes and lymphatics. The use of chemotherapy after surgery has shown to improve symptoms, and prolong survival of patients."

Discussion Questions:

- Are there words that you do not understand?
- Summarize key information that you have obtained from this progress.
- On the basis of the new information, what is your final hypothesis?

Progress 2

(20 minutes)

Faisal is prepared for the surgery. He undergoes a resection of the tumour mass, pericolic lymph nodes and lymphatics along with the normal colon (about 10 cm proximal and distal to the tumour mass). An anal sphincter-saving approach has been preferred and continuity is then restored by direct anastomosis of the two ends. Prior to surgery, Faisal was counseled about the nature of the operation and the possible need for a stoma formation (a temporary opening of the terminal end of the intestine into the anterior abdominal surface).

The surgery is followed by chemotherapy. An oncologist reviews Faisal's condition and starts him on 5-fluorouracil for 6 months. To reduce the toxicity of 5-fluorouracil, the oncologist adds folinic acid. The oncologist explains to Faisal, that there is evidence from research that the chemotherapeutic drug 5-Fluorouracil improves both symptoms of the disease and increases overall survival.

A few months later, Faisal reviews Dr Imam who examines him and arranges for a follow up test by measuring carcino-embryonic antigen (CEA) levels. About six months post-surgery, Faisal becomes aware that his uncle who used to live in England and died about 20 years ago had a colon cancer. He brings this piece of information to the attention of his treating doctor. Dr Imam, explains to Faisal, "this information together with the fact that your younger brother has colonic polyps suggest that your first-degree relatives are at a higher risk of developing colon cancer than normal population. Therefore screening for colon cancer in first-degree relatives is needed for early detection of any changes."

Two years later, Faisal and his brother become interested in working with the Saudi Gastroenterology Society as volunteers to promote screening programs for cancer colon and public awareness about this disease.

Discussion Questions

- Are there words that you do not understand?
- Summarize key information that you have obtained from this progress.
- Construct a mechanism summarizing your final hypothesis with regard to the lesion, the mechanisms underlying Faisal's problems. Provide supportive evidence from history, clinical examination and investigation results.

Case closure:

(10 Minutes)

Faisal recovers well from the surgery and chemotherapy. He has no symptoms and feels much better. He reviews in the out-patient clinic for medical checkup regularly. He undergoes colonoscopy and measurement of CEA every 12 months. His first-degree relatives undergo colonoscopy when their age is 40 years old. Faisal and his brother continue their volunteer work on promoting knowledge about colon cancer and public awareness.

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 histology of the colon. What are the functions of the colon?.
- Discuss risk factors for the development of colon cancer.
- Discuss the pathology and the pathogenesis of colon cancer.
- Use basic sciences to interpret the symptoms and signs of patients with colon cancer.

Learning Objectives:

On completion of this PBL package, students should be able to:

- Link the anatomy and histology of the large bowel with physiologic functions.
- Discuss the pathology of colonic polyps, and colorectal cancer.
- Construct a mechanism showing how a colon cancer occupying the sigmoid region resulted in the patient's symptoms, signs and laboratory results.
- Discuss mechanisms of blood loss and investigations needed for a patient with blood loss anaemia.
- Discuss the process of iron absorption, metabolism, and common causes of iron-deficiency anaemia.
- Construct a brief management plan showing management goals, and management options for a patient with colon cancer.
- Discuss the importance of public awareness about early detection of colon cancer.