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EC ENDOCRINOLOGY AND METABOLIC RESEARCH

Case Report

# The Case of a Young Lady with Abdominal Pain

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## Abstract

**Introduction:** In the current article we present a case of a young patient who came to our emergency room due to abdominal pain. This is done to try and let our readers understand the thinking processes that we as surgeons use when deliberating about this kind of a patient, and later on to see how this evolves as the case becomes more complicated due to an endocrine pathology.

**Methods:** To evaluate the thought process of experts in this field, we decided to use a Web-based system called Kahoot, a classroom formative assessment tool that provides an engaging learning space. Thus, we have used the Kahoot system to find out how our experts would treat this patient, and we have used their responses in Kahoot as part of our results.

**Results:** The results show the different opinions of our experts in handling this case, as well as their expert opinions on how to treat what was the intriguing part of her diagnosis - the fact that she had a solid pseudopapillary tumor of the pancreas.

**Conclusion:** Lower abdominal pain in a young female is a complex entity, which is best handled by a team and done with a systematic approach. The use of basic lab results, and imaging and expert consults is mandatory, and in rare cases (like the one depicted here) one can find themselves with rare entities that demand an extensive diagnosis and treatment pathway.

***Keywords:*** *Abdominal Pain; Incidental Finding; Endocrine Surgery; Bowel Obstruction*

## Introduction

In the current article we present a case of a young patient who came to our emergency room due to abdominal pain. This is done to try and let our readers understand the thinking processes that we as surgeons use when deliberating about this kind of a patient, and later on to see how this evolves as the case becomes more complicated due to an endocrine pathology.

## Case Report

The case is about a 24-year-old woman, generally healthy with no known allergies who is seen in our emergency room due to lower abdominal pain that has lasted for a few hours. No fever, no change in bowel movements. Upon exam - temperature is 36.8°C, pulse 98, BP 119/78. Abdomen is distended, soft, with the lower abdomen being tender but with no guarding. Urine sample shows blood +3, leukocyte +2.

Symptom based diagnosis is common place, though in the UK the two week wait pathway for suspected colorectal cancer patients [3] has highlighted both to GPs and patients the key features to be aware of; whilst this process may smooth the diagnostic pathway it has not produced the anticipated stage shift in disease [4] and has often thrown up some difficult decision making in frail elderly patients diagnosed who may not be suitable for any treatment.

## Methods

Our problem was how we would be able to "tap" the minds of those endocrine surgery experts in dealing with such a case, from its presentation in the ER until post-op evaluations and treatment. To get an effective and immediate response, as well as a more interactive way of conducting this survey, we have used the Kahoot system. Considering progress in the technological means, we decided to use a system that is web-based on a site that enables the creation of quizzes based on scheduled multiple-choice questions - Kahoot. Kahoot was created in 2013 with the sole aim to create impact through behavior design and technology insights. As of December 2013, Kahoot had recorded 15,000 users a day in 88 different countries of the world. This education-through-gaming firm, Kahoot hit 25 million unique users as at the end of 2015 and these statistics is still growing worldwide. Kahoot is a web-based classroom formative assessment tool that provides an engaging learning space. It operates based on a digital classroom game pedagogy, formulating quizzes that are answered using tablets or mobile phones.

Kahoot is a social, game-like, and fun environment mixed with a rich educational content created through the use of Kahoot. Designed to be accessible to classrooms and other learning environments worldwide, Kahoot!'s learning games ("kahoots") can be created by anyone and are not restricted as to age level or subject matter. The platform supports different languages, as in our case it was used in Hebrew. The system has characteristics that engage the learner: participation of all students, competition, scoring, action-driven, experiential learning. The learning and pedagogic theory supported by Kahoot is that of cognitive connectivism. This is because Kahoot gives the lecturer an opportunity to be a facilitator, who is pedagogically aware, creates opportunities for participants to progress, and constantly monitors the outcome. On the other hand, it gives the participants the opportunity to connect learning activity through technology to the actual learning taking place in the class. Kahoot is considered a web-based classroom formative assessment tool that provides an engaging learning space. At the end one can export the answers as an Excel file and send by email.

Thus, we have used the Kahoot system to find out how our experts would treat this patient, and in the results, we have used their responses in the Kahoot as part of our results.

**Study protocol:** We have used a meeting of the Israeli surgical endocrine society to recruit all those who attended to be our study's subjects. This involved general surgeons, head and neck surgeons and those who have had a formal Endocrine surgery fellowship. We were able to recruit 11 participants to this study. We have prepared prior to the meeting the presentation of the case report, as well as a set of 7 questions revolving around the specific turning points in the case, thus getting a better understanding of the thought processes of the participants if they were involved in the case. Our kahoot had an answering time limitation of 60 seconds so as to let the participants think about what the most appropriate answer is, but to too long as to change your mind a few times. An example of how a kahoot question looks like is seen in figure 1. An example of the summative evaluation of the answers is seen in figure 2.

The study was conducted retrospectively to the patient's workup, and thus had no real effect upon the patient's workup or treatment, but it did let us gain an insight to how specialist in the field believe such a workup should be done.

## Results and Discussion

**Question 1:** In the conference there were 11 endocrine surgeons from all major hospitals in Israel. When asked about sending the patient to a consult as of her presentation in the ER, 2 said she needs no further consultation (20%), 1 thought she needs an internist (10%), and 7 thought she needs to see an OBGYN specialist (70%).

She was sent to an OBGYN specialist for evaluation which upon PE had light tenderness in RLQ, PV showed no tenderness. There was small fluid collection in the pelvis (Figure 3). He concluded that there is no evidence of an OBGYN source to her pains. Labs were now ready and showed a mild leukocytosis (13.4), with bilirubin of 1.9/0.3.

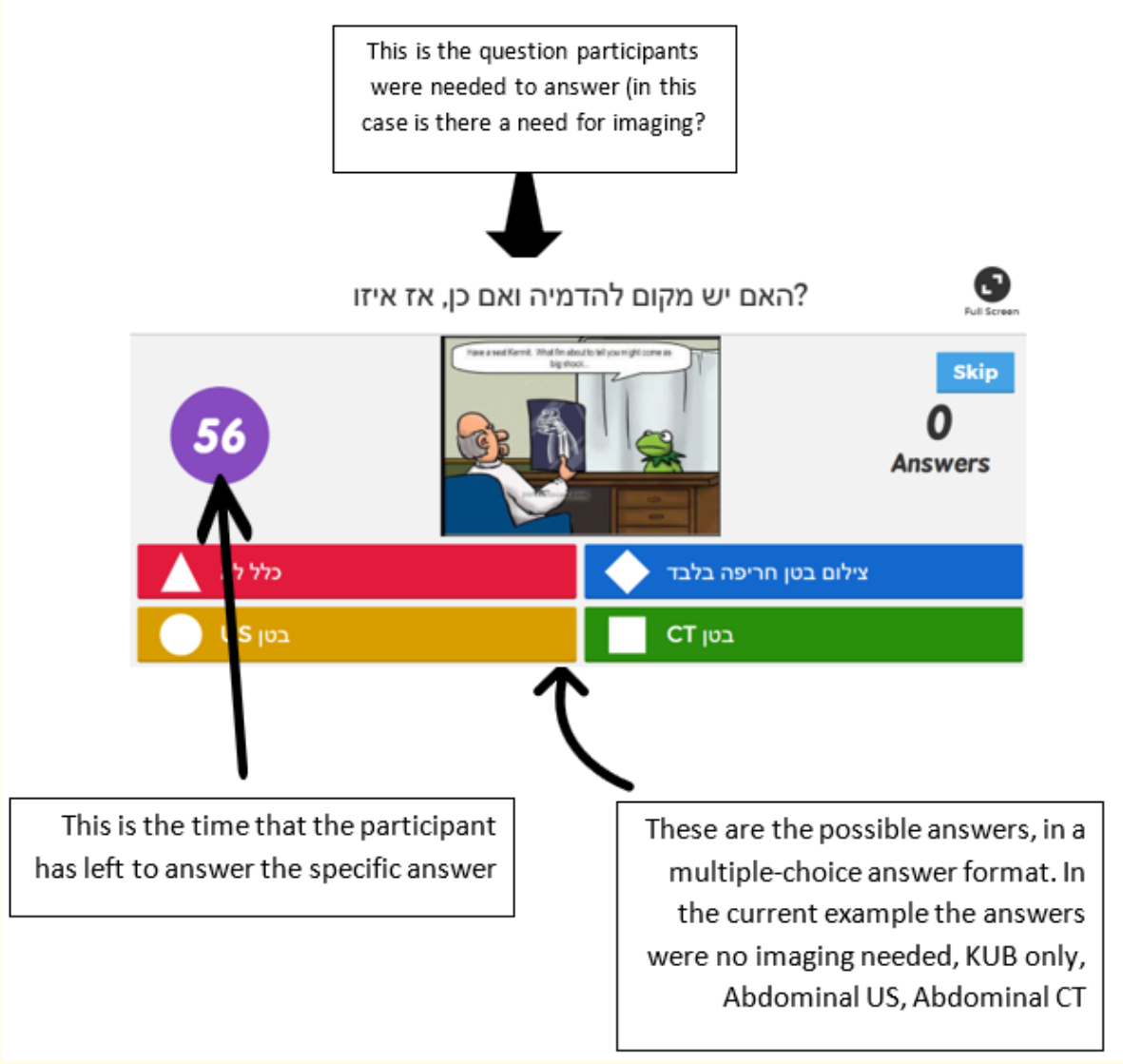


***Figure 1:*** *An example of a kahoot question*

After consultation with OBGYN that was non-conclusive, our endocrine surgeons were asked if they will send her to further imaging - 7 (63.6%) thought she should have an abdominal US, and 4 (36.4%) thought she should have an abdominal CT scan.

She was sent to do an abdominal X-ray (Figure 4) and an US (Figure 5), which were interpreted as normal except for a solid finding in the RLQ, with dimensions of 5*5.5 cm. The US was summarized as an SOL of RLQ.

Now we asked our experts if they will ask for further imaging - 6 asked for an abdominal CT (54.5%), 4 asked for a CT scan with IV and PO contrast (36.4), and 1 asked for an MRI (9.1%).

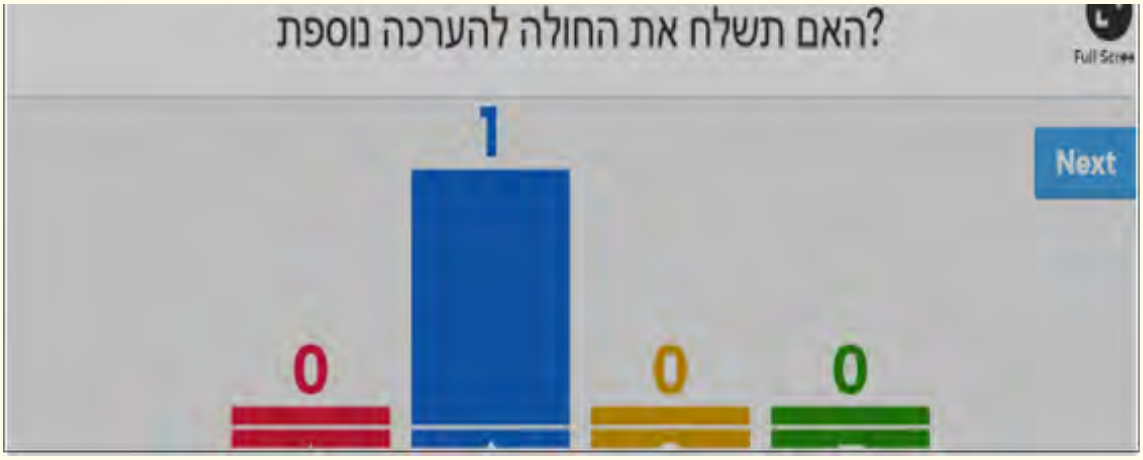


***Figure 2:*** *An example of a kahoot summative evaluation after all subjects have answered.*

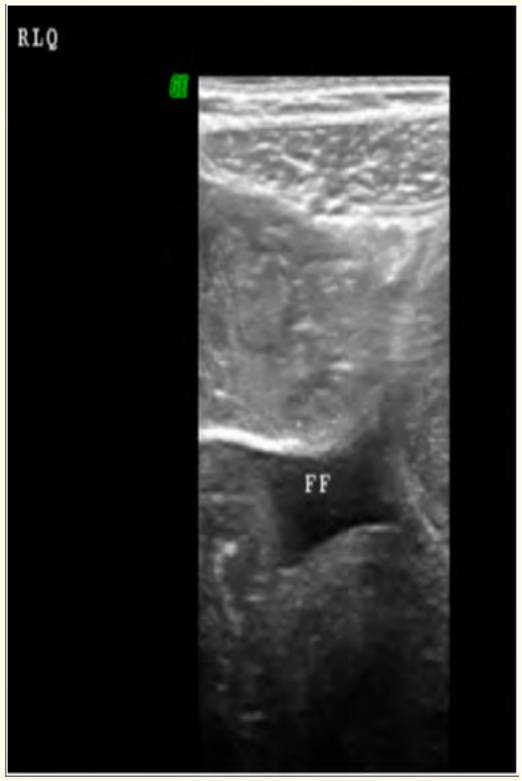


***Figure 3:*** *Vaginal US.*

***Figure 4:*** *Abdominal X-ray.*

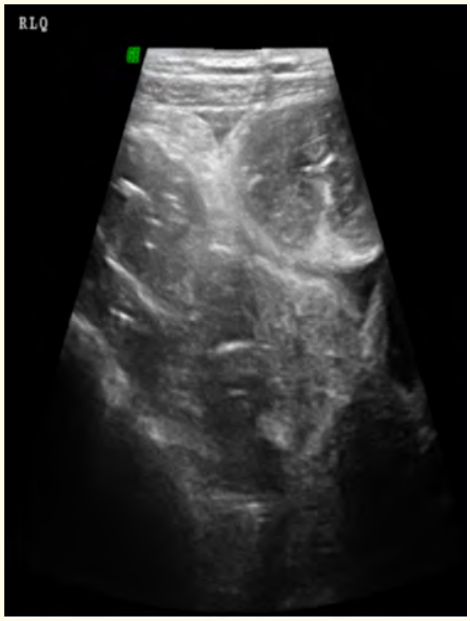


***Figure 5:*** *Abdominal US.*

Due to the findings in the US she was sent to an IV and PO contrast CT (Figure 6). In the formal interpretation the radiologist reported a lesion in RUQ, near the head of the pancreas there's a space-occupying lesion, with a hypodense center that is causing a spread in nearby blood vessels. On later scans the enhancement is not unified, with the center of the lesion staying hypo dense - Necrosis. The papilla is being moved backwards, with no CBD distension. In the distal ileum there is a short stricture and proximal to it there is bowel distension. Large bowel was collapsed. A small fluid collection in the pelvis. No other findings.

***Figure 6:*** *Abdominal CT.*

The radiologist concluded that there is a space occupying lesion in the head of the pancreas with a wide differential diagnosis including a solid pseudopapillary tumor, or a GIST of the duodenum. It was recommended to continue diagnosis with an MRI. Also, there seems to be a small bowel obstruction due to a focal narrowing of the distal ileum, of an unclear origin.

The patient was admitted to our ward, and there our house resident debriefed her thoroughly and found that she had not had a bowel movement and that in the last few years she had a change in bowel movements and abdominal cramps. Upon physical exam there was no localized tenderness, but she had a mechanical audible peristalsis. Did not lose weight, has no B signs.

When asking the experts what they would do with these results 4 (40%) said they will ask for more imaging, 1 asked for a GI consultation (10%), and 5 opted for a diagnostic laparoscopy (50%).

After morning rounds we presented the patient to our gastroenterologists who felt the patient cannot benefit from an endoscopy or colonoscopy and it was decided to have a diagnostic laparoscopy, after explaining this treatment plan to the patient and her family.

Upon laparoscopy we saw small bowel loops a bit distended with no fluid or bowel content; thus, we had surveyed the whole small bowel and found some congenital adhesions in the distal ileum which were taken down with a LigaSure sealing device (Medtronic, Minneapolis, MN). While exploring the abdomen we saw a rough lesion in RUQ, that was not moveable

When considering the surgical procedure and what should be done, we asked our experts about considering intervention for the lesion seen in the pancreas in the imaging - 6 of them (66.7%) said they will do nothing with it, 1 (11.1%) thought they might explore it only if they can stay in the laparoscopic realm, and 2 experts thought it is worthwhile to explore the lesion in the pancreas even if it will necessitate laparotomy (22.2%).

The next question was what should be done after surgery. Here 2 experts (20%) were willing to settle for tumor markers and clinical surveillance, 2 opted for endoscopy, and 6 wanted to have an EUS (60%).

During the operation we decided that the mass in the RUQ will not be intervened upon and further evaluation will be done endoscopically. After the operation the patient felt well, pain was well controlled, and she resumed drinking on POD 1.

On that day she had a bowel movement and thus she started eating, and we decided to order an endoscopic US, an MRCP, and to have markers taken. Her CEA level was less than 0.5, CA-19-9 4.91, CA-15-3 7.21 and CA-125 4.9 (see table 1 for references). She was released on POD2, with an EUS a week later. The EUS showed a hypodense lesion in the head of the pancreas, adjacent to the blood vessels. A biopsy was taken. She was released the day after the EUS and had a follow-up meeting 10 days later. Upon follow-up she is feeling well, eating normally, and has normal bowel movements. Pathology results showed tiny fragments of moderately cellular tumor consisting of uniform epithelioid cells (low nuclear grade) focally arranged in cohesive groups. Papillary structures with fibrovascular cores are also seen. Tiny fragments consistent with intestinal mucosa are also seen. The tumor cells are positive for vimentin, beta-catenin (nuclear stain), CD10, focally and weakly positive for keratin (AE1/3), and negative for synaptophysin, chromogranin, c-kit, DOG1, CD34 markers. The summary was that Morphological and immunohistochemical features are consistent with solid-pseudopapillary tumor of pancreas.

| Test | Reference | The patient's value |
|---|---|---|
| CA-125 | 0 - 35 U/ml | 4.9 |
| CA 15-3 | 0 - 28 U/ml | 7.21 |
| CA 19-9 | 0 - 60 U/ml | 4.91 |
| CEA | 0 - 5 ng/ml | < 0.05 |

***Table 1:*** *Labs and references.*

With these results the next question to our experts was what should be done in the long-term. Here 1 (12.5%) wanted only clinical follow-up; 3 (37.5%) wanted clinical follow-up, tumor markers, and imaging; whereas 4 (50%) decided she should have a pancreaticoduodenectomy (Whipple procedure).

We decided that due to the atypical presentation of a pancreatic lesion, with markers that are not indicative, and a pathology of a solid-pseudopapillary tumor of pancreas we will continue following her every 6 months with tumor markers, EUS, and MRCP as needed.

To know if this line of treatment is justified, one should know a bit more of this entity - solid pseudopapillary tumor of the pancreas is a rare but characteristic neoplasm first described by Frantz in 1959. It afflicts young women, with a 10:1 predominance over men, at an average age of 24 years [1]. Presenting features are usually vague and include abdominal pain, fullness, nausea, and vomiting due to a bulky tumor compressing local structures in the upper abdomen [2]. Most primary tumors (85 - 90%) are localized to the pancreas, with a high percentage being at the tail at the time of diagnosis [3].

Although they have low malignant potential, they can invade locally [2]. Recurrence is unusual following complete surgical resection [3]. Long-term cure is achieved in 95% of cases, mainly when disease is confined to the pancreas. Distant spread, when present, usually comprises synchronous disease to the liver and/or peritoneum [2]. Despite its potential for local infiltration, recurrence is rare following complete excision. Likewise, it is rare for metastases to develop metachronously [4]. Metastatic disease is present in up to 15% of cases. Lymphatics are not involved. Death rate is low, and survival is decades after diagnosis, with rare cases of death that have been described as with asymptomatic metastases [2,3].

As we now know a bit better about this entity we can evaluate our experts' recommendations and how they are reflected in the current literature. Due to the nature and the location of this tumor, the intra-op decision to only care for the immediate acute problem (i.e. the small bowel obstruction) seems well based, surely when considering the fact that we did not have any knowledge of the nature of this lesion. Having her undergo an EUS is also well founded in literature [4,5]. But, when we come to the phase where pathology is already known, here the literature, as well as our experts, are less decisive - 50% opted for a radical operation, whereas the other experts opted for one kind or the other of surveillance.

Being on the side that opted for a less invasive approach, I am biased, but the patient went for a second opinion by our colleague who was for a more conclusive solution. Two months later she had a pancreaticoduodenectomy. Unfortunately, after the operation she suffered from a leak, and needed a prolonged hospitalization and re-habilitation.

Thus, as in real life the answer is always tricky. It is safe to say that in these patients it is only logical to present the odds and risks to the patient and let him (or more likely her) decide.

## Conclusion

Lower abdominal pain in a young female is a complex entity, which is best handled by a team that includes a gynecologist, an internist, and a surgeon. The differential diagnosis is quite extensive, and a systematic approach, even one that is protocol based, is needed. The use of basic lab results, imaging and expert consults is mandatory, and in rare cases (like the one depicted here) one can find themselves with rare entities that demand an extensive diagnosis and treatment pathway. As we understand, the complexity of such a case puts on us as specialist a very fine role - not only to have the know-how of how best to tackle such a case, but also to spread our understanding of this "know how". But to do so, in our evidence-based medicine era, we need first to evaluate the knowledge in this specific entity (which is scarce at best), and to use the best tools we can (As guideline, systematic review, meta-analysis or as in our case experts' opinion).

Our problem how we would be able to "tap" the minds of those endocrine surgery experts in dealing with such a case, was tackled by the use of a Kahoot system. The system has characteristics that engage the learner: participation of all involved, competition, scoring, action-driven, experiential learning. By using this system we not only were able to get in a short period all the experts' opinion in Israel, but also to engage and make all of them involved and re-thinking their own opinions in respect to their peers. Thus, we encourage the use of this system in similar questions, as well as in different settings that might render themselves appropriate for such an inquiry.

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