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OPIS PRZYPADKU
CASE REPORT

Renal ectopia as cause of diagnostic difficulties in 43-year-old man hospitalized due to suspicion of colorectal cancer

Ektopia nerki jako przyczyna trudności diagnostycznych u 43-letniego mężczyzny hospitalizowanego z powodu podejrzenia raka jelita grubego

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ABSTRACT

Colorectal cancer and its diagnosis remain a significant clinical problem. Renal ectopia is one of the major developmental anomalies of the urinary system, although it is relatively rare in the general population. It is most often asymptomatic and is revealed by chance. This study presents a case report of a 43-year-old man, in whom colorectal cancer was suspected due to the suggestive clinical picture (abdominal pain, constipation, weight loss, a family history of colorectal cancer) and the suspicion of a proliferative process described in an outpatient ultrasound examination of the abdominal cavity. As a result of the performed diagnostics, no proliferative process was found in the patient, and the previously diagnosed lesion that raised the suspicion of cancer turned out to be the right kidney located in the pelvis. The presented case report shows that renal ectopia may cause diagnostic difficulties, among others in patients diagnosed with a neoplastic process.

KEYWORDS

renal ectopia, abdominal pain, constipation, weight loss, colorectal cancer

STRESZCZENIE

Rak jelita grubego i jego diagnostyka pozostają istotnym problemem klinicznym. Ektopia nerki jest jedną z głównych anomalii rozwojowych układu moczowego, chociaż występuje stosunkowo rzadko w populacji ogólnej. Najczęściej przebiega bez objawów i jest wykrywana przypadkowo. W pracy przedstawiono opis przypadku 43-letniego mężczyzny, u którego podejrzewano raka jelita grubego z powodu sugestywnego obrazu klinicznego (ból brzucha, zaparcie, spadek masy ciała, obciążający wywiad rodzinny w kierunku raka jelita grubego) oraz podejrzenia procesu rozrostowego na podstawie wykonanego ambulatoryjnie badania ultrasonograficznego jamy brzusznej. W wyniku przeprowadzonej

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diagnostyki nie stwierdzono u chorego procesu rozrostowego, rozpoznawana zaś uprzednio zmiana budząca podejrzenie nowotworu okazała się położoną w miednicy prawą nerką. Przedstawiony opis przypadku pokazuje, że ektopia nerki może powodować trudności diagnostyczne, m.in. u chorych diagnozowanych w kierunku procesu rozrostowego jelita.

SŁOWA KLUCZOWE

ektopia nerki, ból brzucha, zaparcie, spadek masy ciała, rak jelita grubego

INTRODUCTION

Malignant neoplasms are among of the main causes of morbidity and mortality in developed countries [1], next to cardiovascular diseases [2]. Despite the development of ever more effective therapeutic options, the diagnosis of cancer at a too late stage often prevents the use of effective causal treatment. Therefore, the early diagnosis of cancer remains an important challenge for contemporary medicine.

Colorectal cancer is one of the most important malignancies. Among neoplasms, it is the third cause of morbidity and the fourth cause of mortality worldwide [3]. Although there is a screening program for colorectal cancer in Poland, the clinical practice shows that sometimes the disease is diagnosed at a stage when full recovery is no longer possible. It is also worth noting that the symptomatology of colorectal cancer is diverse and depends on the location of the tumour; however, in some cases, in the early stages of the disease, the symptoms may be atypical, which makes it difficult to make a proper diagnosis [4]. For example, in some cases, the deterioration of exercise tolerance conditioned by exercise dyspnoea is the first symptom of colorectal cancer, without typical gastrointestinal symptoms [5,6,7].

Therefore, the diagnosis of malignant tumours is associated with two difficulties: on the one hand, unusual symptoms may be overlooked in some cases, which may lead to a delay in diagnosis, and on the other hand, high oncological vigilance among physicians may sometimes lead to the overinterpretation of certain facts and an exaggerated suspicion of cancer. The purpose of this paper is to present a case report of a 43-year-old man with a suggestive medical anamnesis leading to the diagnosis of colorectal cancer, in whom newly diagnosed right renal ectopia was initially interpreted as a tumour in an ultrasound examination.

CASE REPORT

Anamnesis and physical examination

A 43-year-old man, until then without a significant history of chronic diseases or permanent medications, was admitted to the Clinic for urgent diagnostics. The patient was referred by a family doctor who suspected a neoplastic disease. The same doctor, on the day of the referral to the hospital, performed an abdominal ultrasound examination of the patient, in which he suspected a nodular structure within the pelvic cavity. In the anamnesis, the patient reported abdominal pain for about two months, accompanied by constipation and a little weight loss. The patient was unable to report an accurate amount of weight loss. According to his relation, he was always thin. In addition, he drew attention to the family history of colorectal cancer. The patient's cousin was diagnosed with colorectal cancer at the age of thirty-eight. No significant abnormalities were found in the physical examination.

Laboratory tests

The laboratory tests included the determination of peripheral blood count parameters, percentage of glycated haemoglobin, red blood cell sedimentation rate, electrolyte concentration (sodium, potassium, calcium, phosphorus), glucose, creatinine, urea, C-reactive protein, total protein, albumin, vitamin B12, coagulation parameters (prothrombin time, activated partial thromboplastin time, as well as D-dimer and fibrinogen concentration), selected tumour markers (carcinoembryonic antigen, alpha fetoprotein, prostate-specific antigen), lipid profile parameters (total cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, triglycerides), parameters for the assessment of liver and pancreatic damage (amylase, transaminases, gamma glutamyl transpeptidase and alkaline phosphatase activity, bilirubin concentration), thyroid function parameters (thyrotropin, free thyroxine and free triiodothyronine), parameters of muscle and myocardial damage (creatine kinase, creatine kinase MB, and troponin) and iron metabolism parameters (blood iron concentration and total iron binding capacity). In addition, a general examination of the urine with sediment was performed. The laboratory tests showed a slightly elevated fasting plasma glucose (100.2 mg/dl) with a normal glycated haemoglobin percentage (5.66%) and the presence of ketone bodies in the urine test. No other abnormalities were found in the laboratory tests.

Diagnostic imaging

During hospitalization, abdominal ultrasound was repeated. It was noted that the right kidney was not visualized in its typical position, and in the small pelvis, in the vicinity of the bladder on the right side,

a structure was seen that most likely corresponded to an ectopically rotated right kidney (Figures 1 and 2). In addition, a deposit was found in the gallbladder. The remaining structures of the abdominal cavity and retroperitoneal space, routinely assessed in ultrasound examination, were described as normal.

A B

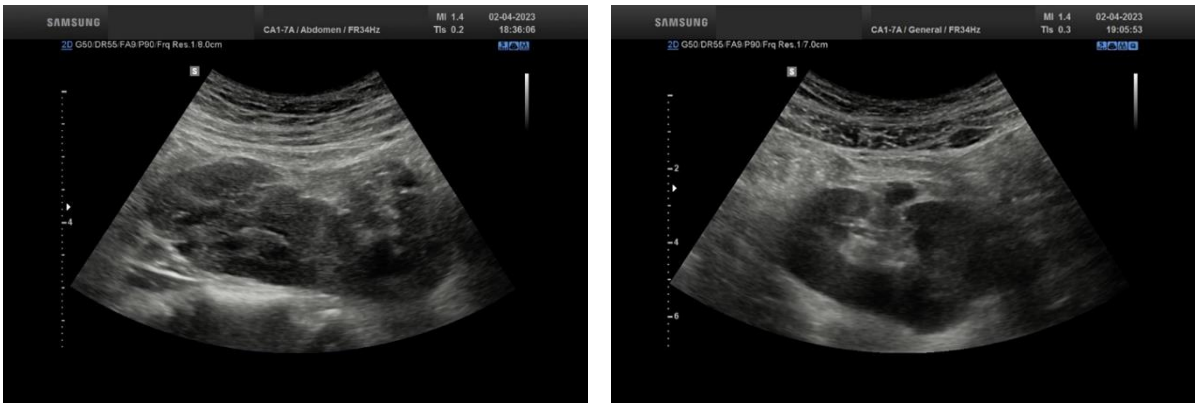

Fig. 1. Ectopic right kidney, visible in various projections.

Fig. 2. Right kidney located ectopically in small pelvis adjacent to well-filled bladder.

As shown, in the ultrasound examination performed at the Clinic, the previously described lesion had a kidney morphology, which was confirmed by contrast-enhanced computed tomography (CT) of the abdomen and small pelvis, which was performed primarily because of the anamnesis and family history of malignancy. The CT scan images are shown in Figures 3–5. A chest radiograph was also taken, which was described as normal.

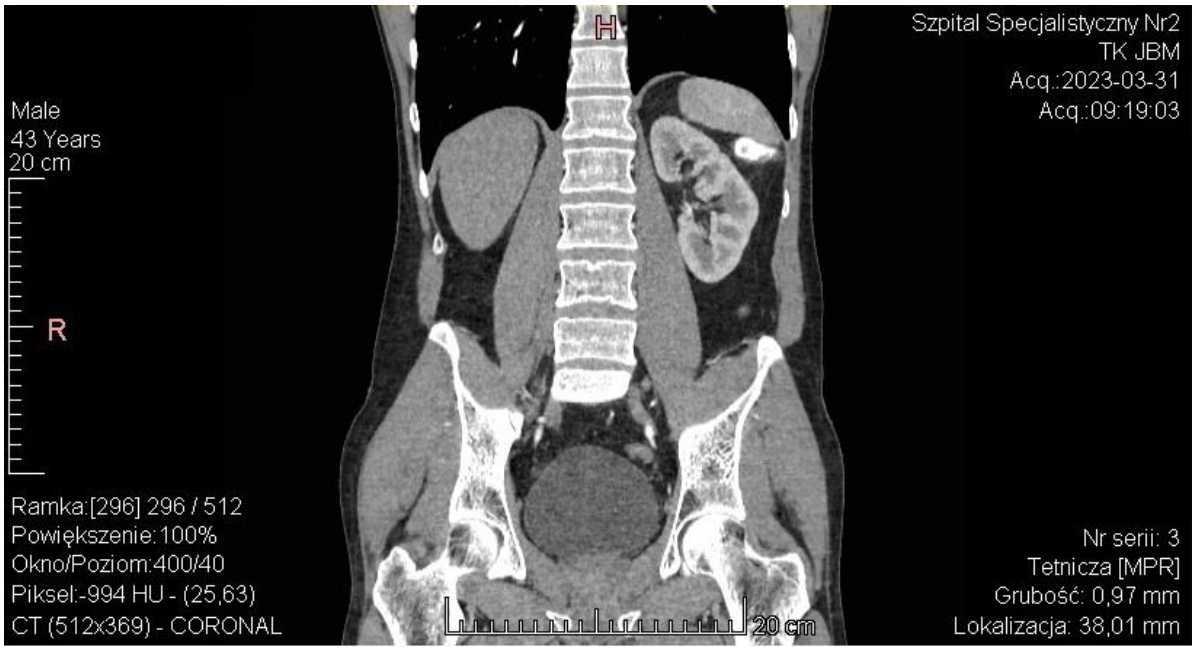

Fig. 3. Image reconstruction from contrast-enhanced CT scan of abdomen and small pelvis in arterial phase. Absence of right kidney in its typical position.

Fig. 4. Image reconstruction from contrast-enhanced CT scan of abdomen and small pelvis in arterial phase. Ectopic right kidney is marked with arrow.

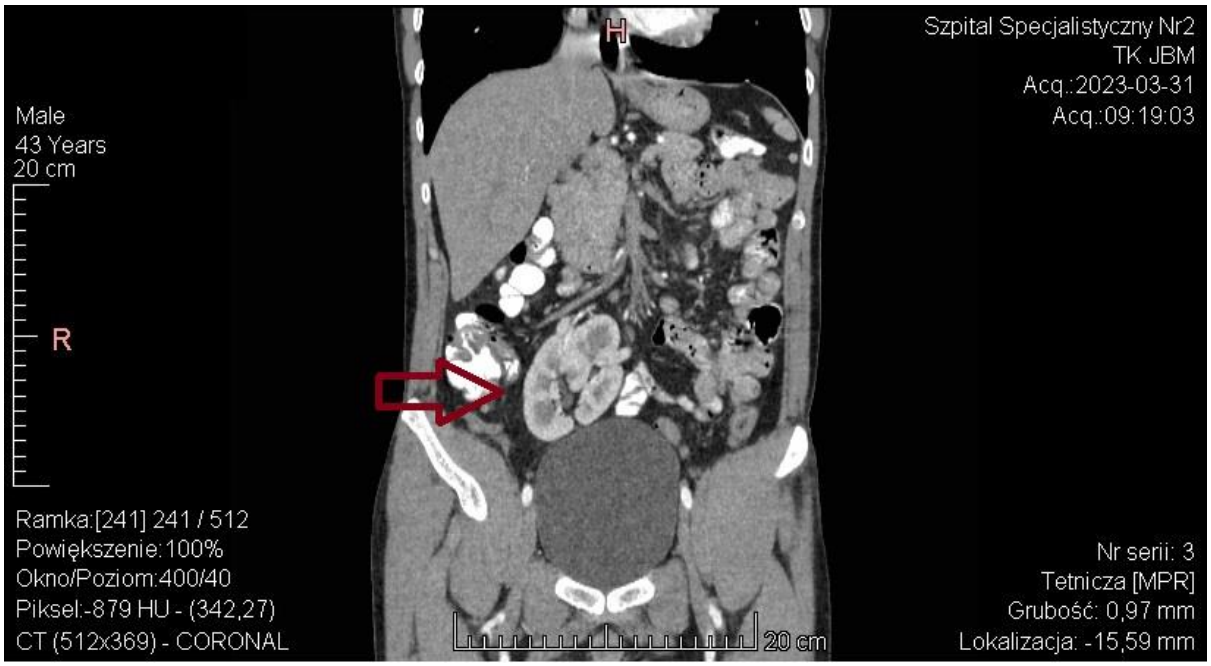

Fig. 5. Image reconstruction from a contrast-enhanced CT scan of abdomen and small pelvis in arterial phase. Ectopic right kidney is marked with arrow.

Endoscopic diagnosis of gastrointestinal tract

During hospitalization at the Clinic, an endoscopy of the upper and lower gastrointestinal tract was performed. The gastroscopy revealed the presence of three small polyps within the stomach (up to five millimetres in size) and reddening of the gastric mucosa around the pylorus. In the histopathological examination of the removed polyps, fundic gland polyps were found. No abnormalities were found in the colonoscopy, and the quality of the patient's preparation for the examination was assessed as good.

Body composition analysis

During hospitalization, body composition analysis was performed using the bioelectrical impedance method employing a TANITA MC-780 apparatus. The procedure was conducted owing to the decrease in body weight reported by the patient, as a supplement to the basic anthropometric measurements. Table I presents the values of selected anthropometric indices and body composition analysis parameters.

Table I. Values of selected anthropometric and body composition parameters

BMI	WHR	Total body mass	Fat mass	Muscle mass	Bone mass	TBW
18.6 kg/m^2	0.91	63.8 kg	10.5 kg/16.4%	50.6 kg	2.7 kg	38.0 kg/59.6%

BMI – body mass index; WHR – waist-to-hip ratio; TBW – total body water.

DISCUSSION

The presented description shows the case of a patient in whom an ultrasound image of an ectopic kidney was initially interpreted as a tumour in the abdominal cavity. It should be noted that in view of the patient's reported symptoms and family history of colorectal cancer, regardless of the outpatient ultrasound examination, there were strong indications for a detailed clinical assessment of the patient with a wide range of additional tests. Nevertheless, the presented case encourages us to consider the issue of renal ectopia as a possible cause of diagnostic difficulties and doubts, which in some cases may imply unnecessary additional tests.

The incidence of simple renal ectopia is not exactly known. Depending on the research methodology (autopsy studies or the analysis of clinical material based on imaging studies), it is estimated in the range of 1:900 to 1:3000. The frequency is similar in women and men [8]. On the other hand, the frequency of crossed renal ectopia is estimated at 0.05% to 0.1% [9]. Renal ectopia can be cranial (usually intrathoracic) or caudal (abdominal and pelvic). A pelvic kidney is the most common form of renal ectopia [10]. Although the clinical course of pelvic renal ectopia is usually asymptomatic and it is diagnosed in clinical imaging

performed due to other causes, in some cases the renal ectopia is associated with a higher incidence of hydronephrosis, lithiasis, and urinary tract infection [11].

There are publications in the literature showing that renal ectopia may cause difficulties in diagnosis. Ogbetere [12] described a case report that crossed fused renal ectopia with pyelonephritis mimicking appendix mass. A case of a tumour in the area of the skin around the sacrum in a newborn girl was described, which, as it turned out in the course of diagnostics, originated from the ectopic immature renal tissue [13]. Although the second example cited is not an ectopy of the kidney in the strict sense, it has been shown as a striking case of the presence of kidney tissue in an abnormal position.

Data available in the literature also show that renal ectopia may in some cases be of importance in the performance of certain invasive therapeutic procedures. In the literature, there are case reports showing the technical aspects of the endovascular treatment of abdominal aortic aneurysm in patients with renal ectopia [14,15,16]. Tsuboi et al. [17] reported a case of partial nephrectomy in patients with left-to-right crossed fused renal ectopia with clear cell renal cell carcinoma. Aspects of the operational treatment of nephrolithiasis in an ectopic kidney have been also discussed [18,19]. Tayeb et al. [20] reported a case of angiomyolipoma embolization in a patient with crossed-fused renal ectopia.

Renal cancer in patients with renal ectopy has been described in the literature [21,22], showing that the clinical manifestation of renal cancer may have an atypical course in this population [23]. Adamakis et al. [24] described their experiences regarding the difficulties that a pelvic kidney may cause in performing a cystectomy and lymphadenectomy in patients suffering from urothelial carcinoma of the bladder. There are few publications in the literature that combine the issue of renal ectopia with the issue of proliferative disease of the colon. Sakamoto et al. [25] described a case of a patient operated laparoscopically owing to sigmoid cancer. As a consequence of the intraoperatively found atypical arrangement of blood vessels, it was decided to convert to laparotomy, in which an ectopic kidney was found. 10 years later, Nakai et al. [26] presented a case report of a patient with crossed-fused renal ectopia, successfully treated laparoscopically for sigmoid cancer, but in this case, unlike the previous one, the atypical anatomical arrangement was recognized before surgery using CT, which allowed precise planning of the procedure.

To our knowledge, no case of renal ectopia in a patient diagnosed due to the suspicion of colorectal cancer has been reported to date. In the case described by us, the suspicion of neoplastic disease was not confirmed; however, the case presented by us shows that renal ectopia may contribute to the emergence of diagnostic difficulties in patients with suspected proliferative disease. The present case also demonstrates that whenever an ultrasound examination fails to locate a kidney in a typical field, the possibility of an ectopic kidney should be considered and actively searched for in other locations, primarily in the pelvis.

CONCLUSION

In conclusion, the presented case report shows that renal ectopia may cause diagnostic difficulties and it is worth remembering about the possibility of this anatomical variation in everyday clinical practice.

Author's contribution

Study design – G.K. Jakubiak, M. Pietrzak, G. Cieślar, A. Stanek

Manuscript preparation – G.K. Jakubiak, M. Pietrzak, G. Cieślar, A. Stanek

Literature research – G.K. Jakubiak

Final approval of the version to be published – G.K. Jakubiak, M. Pietrzak, G. Cieślar, A. Stanek

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