



SURGICAL ONCOLOGY-BASED CHECK-UP PROGRAM AND DETERMINING OF ASYMPTOMATIC PATHOLOGIES

CERRAHİ ONKOLOJİ TEMELLİ CHECK-UP PROGRAMI VE ASEPTOMATİK PATOLOJİLERİN BELİRLENMESİ

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ABSTRACT

Introduction: Our study aims to determine the effectiveness of check-up programs in the early diagnosis of benign and malignant pathologies, and evaluate their importance.

Methods: Posteroanterior chest X-ray, thyroid, and abdominal ultrasonography were performed. Breast ultrasonography was performed on all females and mammography on those over 40 years. Fecal occult blood, carcinoembryonic antigen, and prostate-specific antigen tests were performed on the cases along with hemogram and routine biochemical tests. Radiological images and reports were retrospectively scanned, and fecal occult blood, carcinoembryonic antigen, and prostate-specific antigen values were examined. Breast Imaging Reporting and Data Systems (BIRADS) in breast radiology and the Thyroid Imaging Reporting and Data System (TIRADS) in thyroid radiology were used for classification.

Results: 1411 cases were included in this study. 49.4% were female and 50.6% male. Median age was 50 years. Benign lesions in the liver were detected in 5.31% of the cases, kidney stones in 4.7%, and cholelithiasis in 5.7%. Benign Prostatic Hyperplasia was observed in 20% of the males. Thyroid gland nodule with a risk of malignancy in 3.8% and biopsy was recommended. Malignancy-suspicious lesions were detected in 0.28%, that performed breast ultrasonography and in 0.8%, that performed mammography, and biopsy was recommended. Normal lung parenchymal findings were detected in 75.4%, minor in 22%, and major in 2.6%, and thoracic computed tomography was recommended.

Conclusions: Effective check-up programs are found to be beneficial for public health as they provide diagnosis and follow-up in benign lesions and early diagnosis and treatment opportunities in malignant/premalignant lesions.

Keywords: Check-Up, Cancer, Radiology Health Screening Program

ÖZET

Giriş: Çalışmamızın amacı check-up amacıyla başvuran sağlıklı bireylerin bulgularını paylaşmak, check-up programlarının benign ve malign patolojilerin erken tanısındaki etkinliğini saptamaktır.

Yöntemler: Check-up programı dahilinde; tüm olgulara posteroanterior akciğer grafisi, tiroid ve batin ultrasonografisi yapılmıştır. Tüm kadın olgulara meme ultrasonografisi ve 40 yaşından büyüklere mamografi uygulanmıştır. Hemogram ve rutin biyokimyasal testlerle birlikte gaytada gizli kan, karsinoembriyonik antijen ve erkeklerde prostat spesifik antijen testi yapıldı. Radyolojik görüntüler ve raporlar retrospektif olarak tarandı, laboratuvar sonuçlarından ise gaytada gizli kan, karsinoembriyonik antijen ve erkeklerde prostat spesifik antijen testi değerleri incelendi. Meme radyolojisinde meme görüntüleme raporlama ve veri sistemi (BIRADS), tiroid radyolojisinde tiroid görüntüleme raporlama ve veri sistemi (TIRADS) sistemi kullanılarak sınıflandırma yapıldı. Batin ultrasonografi bulguları organ spesifik olarak ayrı ayrı değerlendirildi.

Bulgular: Çalışmaya 1411 olgu dahil edildi. Olguların %49,4'ü kadın, %50,6'sı ise erkek, median yaş 50 idi. Olguların %5,31'inde karaciğerde benign lezyon, %4,7'sinde böbrek taşı, %5,7'sinde kolelityazis, kadın olguların %2,72'sinde benign jinekolojik kitle tespit edildi. Erkeklerin %20'sinde benign prostat hiperplazisi görüldü. %3,8'inde tiroid bezinde malignite şüpheli nodül görüldü ve biyopsi önerildi. Meme Ultrasonu yapılan olguların %0,28'inde, mamografi yapılanların ise %0,8'inde malignite şüpheli lezyon saptandı ve biyopsi önerildi. Olguların hepsine akciğer grafisi çekildi. %75,4'ünde normal, %22'sinde minör, %2,6'sında ise majör akciğer parankim bulguları saptandı ve bu olgulara toraks bilgisayarlı tomografisi ile ileri tetkik önerildi.

Sonuç: Çalışmadaki sonuçlarımıza göre; etkin check-up programları benign lezyonlarda tanı ve takibi sağladığından, malign veya premalign lezyonlarda ise erken tanı ve tedavi şansı sunduğundan toplum sağlığı açısından yararlı bulunmuştur.

Anahtar Kelimeler: Check-up, kanser, radyoloji, sağlık tarama program

INTRODUCTION

Check-up programs are defined as general systematic checks performed to evaluate the general health status of healthy individuals without any disease, with physical

examinations, preventive tests, and interventions for early diagnosis of possible health problems (1). Health screenings can be applied specifically to the person, gender, age, and risk group of diseases due to their advantages such

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as early diagnosis, allowing interventions to prevent the disease, and being able to follow the detected pathology. Organ-specific screenings such as breast, prostate, and lung are widely used (2).

One of the genders and age-specific screening programs accepted globally is breast screening. Mammography is the most widely used screening technique for early diagnosis of breast cancer and plays an important role in reducing breast cancer deaths. A spiculated, irregularly shaped, and high-density mass detected in mammography is the most suspicious finding in terms of malignancy. Calcification is a common finding in mammography. In addition, when a mass is seen in mammography, other accompanying findings such as skin or nipple retraction, skin or trabecular thickening, and axillary lymphadenopathy should also be evaluated. When a mass is seen in mammography, Ultrasonography (US) is quite useful in distinguishing between solid/cystic. Breast Imaging Reporting and Data Systems (BIRADS) is the standard reporting system (3). BIRADS has high diagnostic accuracy rates in distinguishing benign/malignant. In addition, short-term follow-up of lesions defined as BIRADS-3 as an alternative to biopsy reduces the number of biopsies performed in benign lesions (4).

The incidence of thyroid nodules is rapidly increasing, and careful risk stratification is important in preventing overdiagnosis and treatment. The first radiological modality to evaluate the thyroid gland is US criteria such as the size, borders, internal structure of the thyroid nodule, calcification in the nodule, and Doppler US is very valuable in distinguishing between benign and malignant lesions (5). To reduce unnecessary imaging and biopsies, it is necessary to evaluate the US features of thyroid nodules in a standardized manner. Thyroid Imaging Reporting and Data System (TIRADS) is currently the most useful method for thyroid screening (6-7). Postero-anterior chest X-ray (PA-Chest X-ray) is the first imaging method used for screening purposes for lung cancer. PA-Chest X-ray, which has advanced methods and settings, can detect lung cancer early. If an abnormality is detected in PA-Chest X-ray, thoracic Computed Tomography (CT) is recommended (8).

In asymptomatic individuals, abdominal US, which is used for screening purposes, can be used to identify benign pathologies such as gallstones and kidney stones, but which may cause symptoms in the future, in addition to liver cancer, kidney cancer, and other intra-abdominal cancer screenings. In recent years, it has found a place in routine screenings (9). US is the first-choice imaging method for liver masses due to its advantages such as being radiation-free, non-invasive, relatively inexpensive, and easy to apply. It is used as a first-line imaging method for focal liver lesions (10). Non-Alcoholic Fatty Liver Disease (NAFLD) is the most common liver disease with a prevalence of 20% to 46%. US is the most frequently preferred imaging technique for

screening fatty liver, gallbladder, and biliary tract due to its low cost, easy accessibility, and lack of radiation (11-12).

The first medical imaging for urinary tract is US. The most common renal lesion is simple cysts. Most are benign and follow-up is sufficient. Some benign renal cysts may be complicated by bleeding or infection or may become calcified. It may be difficult to distinguish them from heterogeneous, semisolid cystic renal tumors such as cystic Renal Cell Carcinoma (RCC), multilocular cystic nephroma, and mixed epithelial and stromal tumors with US. When such US findings are present, further examination with contrast-enhanced Magnetic Resonance Imaging (MRI) is necessary (13).

Both adrenal glands can be evaluated with US. Various masses such as adenoma, pheochromocytoma, and metastasis can be seen in the adrenal region. When a solid mass is seen in the adrenal region on US, a differential diagnosis can be made with contrast-enhanced fat-suppressed MRI (14).

First method for diagnosing female genital system is US to define polycystic ovary syndrome and endometrial pathologies. Doppler US also contributes to the differential diagnosis. In addition to US, MRI is important in distinguishing benign/malignant ovarian masses (15).

While the head and uncinata process of the pancreas are relatively easier to image with US, imaging the body and tail is difficult due to intra-abdominal gas and obesity. Pancreatic echogenicity may appear hypoechoic or hyperechoic (16). Solid or cystic lesions may be seen in the pancreas. Additional cross-sectional examinations are required for a clearer differential diagnosis (17). US is the most common radiological imaging for spleen. Spleen dimensions can be measured. Congenital anomalies such as accessory spleen, polysplenia, wandering spleen, and contour lobulation can be distinguished. Cysts are seen as anechoic, while hemangiomas are seen as hyperechoic. Abscesses are seen as thick-walled, hypoechoic lesions containing dense fluid. Primary spleen lymphoma is seen as millimetric hypoechoic nodular zones with unclear boundaries in the spleen parenchyma. Metastatic tumors are seen as isoechoic nodular lesions with hypoechoic halos (18).

Tumor markers such as Carcinoembryonic Antigen (CEA), Prostate Specific Antigen (PSA), α -fetoprotein (AFP), CA 19-9, CA 125, and CA 15-3 are included in various health screening programs because they are non-invasive and less expensive than interventional diagnostic methods. CA-125 predicts ovarian cancer, and CA 15-3 breast cancer and provides patients with an early-stage diagnosis and surgery (19). CA 125 and CA 15-3 are screening tests specific to females, and PSA is specific to males. With the use of PSA for check-ups, the incidence of advanced prostate cancer has decreased. Prostate cancer can now be detected at an early stage and provides patients an opportunity for surgery (20).

When the upper intestinal system is to be examined, gastroscopy is the best option for upper intestinal system. Even small lesions can be seen with a gastrocope and provide an opportunity for diagnosis. Benign and malignant lesions can be easily separated with the advantage of biopsy (21). The most important screenings are Fecal Occult Blood (FOB) and colonoscopy to prevent colorectal cancer. Colonoscopy allows early diagnosis of colorectal cancer with its real-time imaging capability and biopsy advantage. Colonoscopy is necessary for patients with FOB positivity (22).

In normal healthy individuals, those with a family history of cancer, and individuals who are concerned about themselves, early diagnosis can be made in health screenings performed with non-invasive, radiation-free methods. This can provide relief for healthy individuals who are concerned about their illness. For this reason; check-up programs are applied in many health institutions.

Our aim in this study is to share our radiological and laboratory findings in the health screening program that healthy adult cases have voluntarily performed in our university hospital, to determine the effectiveness of this program in possible early cancer diagnosis.

METHODS

Healthy adults who voluntarily had a check-up at our institution were included in the study. All cases underwent PA-Lung X-rays, thyroid, and abdominal US. All female cases underwent breast US and those over 40 years of age mammography in addition. Hemogram and biochemical laboratory tests, FOB, CEA, and male cases underwent PSA (males) tests were performed.

Radiological findings were evaluated retrospectively by a single radiologist (D.D.). All verified radiology reports and laboratory results included in the study were evaluated retrospectively by a single surgical oncologist (K.G.).

Ethics committee approval (Istanbul Okan University non-invasive clinical research ethics Received No:169/35, dated 18-10-2023) before initiating the research. The study complies with the principles of the Declaration of Helsinki and relevant legislation was carried out appropriately.

Mean, standard deviation, minimum, maximum, frequency, and ratio values were used in the descriptive statistics of the data. The distribution of variables was measured by Kolmogorov Smirnov, and Shapiro-Wilk tests. Mann-Whitney U test was used in the analysis of quantitative independent data with non-normal distribution. Chi-Square test was used in the analysis of qualitative independent data. SPSS 28.0 program was used in the analyses. Descriptive information is expressed in numbers (n) and percentages (%). The Chi-Square test was used in intergroup comparisons. Significance was assumed when the p-value was <0.05.

RESULTS

1411 healthy individuals, females n=697 (49.4%), and males n=714 (50.6%) included in this study who voluntarily had a check-up at our institution between January 2021 and July 2022. Median age was 50, mean age 50.3 ± 13.2 , and range between 18-87. There was no significant difference between male and female cases in terms of gender and age ($p > 0.05$).

Grade-3 hepatosteatorosis was detected with liver US in 34 patients (2.4%) and these patients were referred to the gastroenterology clinic to be evaluated for pre-cirrhotic processes. Hepatomegaly and hepatosteatorosis rates in the liver were significantly higher in men than women ($p < 0.05$). One or more liver hemangiomas were detected in 31 patients (2.2%). The rate of liver hemangiomas was significantly higher in females than in males ($p < 0.05$). The rates of liver cysts and additional pathology did not differ significantly between males and females ($p > 0.05$). One or more simple liver cysts were detected in 44 patients. Sludge in the gallbladder was detected in 41 patients (2.9%), and cholelithiasis in 81 patients (5.7%) and laparoscopic cholecystectomy was recommended. Sludge and polyps in gallbladder were significantly higher in males than females ($p < 0.05$).

Stones were detected in the right kidney in 29 patients (2%) and the left kidney in 38 patients (2.7%). Stones in both kidneys did not differ significantly between males and females ($p > 0.05$). Cysts in both kidneys were significantly higher in males than females ($p < 0.05$).

Gastric wall thickening was detected in 15 cases (1.1%), and gastroscopy was recommended. FOB was positive in 42 (3%), and gastroscopy/colonoscopy were recommended. FOB positivity rate between males and females ($p = 0.961$) did not show a significant difference. Splenomegaly was detected in 23 (1.6%) and hematology control was planned. Cystitis was detected in 22 (1.6%) and they were followed up under medical treatment. Cystitis was significantly lower in males than females ($p < 0.05$). BPH was seen in 143 (20%) males. Uterine myoma was detected in one female, and ovarian cyst was detected in 18 females. These patients were followed up in the gynecology clinic (Tables 1 and 2).

In thyroid gland examinations, TIRADS-4 lesions were found in 53 cases (3.8%) and fine needle biopsy was planned. In breast examinations, one of each BIRADS-4A, and BIRADS-4C lesions are found. Mammographic examinations revealed BIRADS-4A in one female, BIRADS-4B in one, BIRADS-4C in one, and BIRADS-5 in one. Breast MRI and TRU-CUT biopsy were recommended for these cases (Table 3).

Age did not differ significantly ($p > 0.05$) between males and females. CEA levels were significantly lower in males than females ($p < 0.05$) (Table 4).

The degree of liver hepatosteatorosis and hepatomegaly were significantly higher in males than females ($p < 0.05$).

Table 1: Sonographic findings of the liver and gallbladder

		n	%
Liver Hepatosteotosis	(-)	600	42.5%
	Grade I	588	41.7%
	Grade II	189	13.4%
	Grade III	34	2.4%
Liver Hepatomegaly	(-)	1107	78.5%
	(+)	304	21.5%
Liver Hepatomegaly	(-)	1380	97.8%
	One	25	1.8%
	More than one	6	0.4%
Liver Cyst	(-)	1367	96.9%
	One	30	2.1%
	More than one	14	1.0%
Gallbladder Stone	(-)	1330	94.3%
	(+)	81	5.7%
Gallbladder Polyp	(-)	1323	93.8%
	One	71	5.0%
	More than one	17	1.2%
Gallbladder Sludge	(-)	1370	97.1%
	(+)	41	2.9%

The rate of liver hemangioma was significantly lower in males than females ($p < 0.05$). The rate of liver cysts did not differ significantly ($p > 0.05$) between males and females (Table 4).

The presence of gallbladder stones did not differ significantly ($p > 0.05$) between males and females. The presence of gallbladder polyps was significantly ($p < 0.05$) higher in males than females. The presence of gallbladder sludge was significantly ($p < 0.05$) lower in males than females (Table 4).

There was no significant difference ($p > 0.05$) in the presence of stones in the right and left kidney between males and females. The presence of cysts in the kidneys was significantly higher in males than females ($p < 0.05$) (Table 5).

The antral wall thickening rate was significantly lower in males than females ($p < 0.05$). Cystitis was significantly lower in males than females ($p < 0.05$). There was no significant difference ($p > 0.05$) in the FOB positivity between males and females (Table 6).

Table 2: Sonographic findings of other intra-abdominal organs

		n	%
Stone in right kidney	(-)	1382	97.9%
	One	27	1.9%
	More than one	2	0.1%
Cyst in right kidney	(-)	1256	89.0%
	One	154	10.9%
	More than one	1	0.1%
Right kidney Additional pathologies	(-)	1323	93.8%
	Pelvic Ectasia	12	0.9%
	Other benign findings	76	5.4%
Stone in left kidney	(-)	1373	97.3%
	One	38	2.7%
Cyst in left kidney	(-)	1263	89.5%
	One	146	10.3%
	More than one	2	0.1%
Left kidney Additional pathologies	(-)	1328	94.1%
	Pelvic Ectasia	15	1.1%
	Other benign findings	68	4.8%
Pancreas	Normal	1403	99.4%
	Steatosis	7	0.5%
	Other benign findings	1	0.1%
Stomach	Normal	1396	98.9%
	Antral wall thickening	15	1.1%
Spleen	Normal	1378	97.7%
	Splenomegaly	23	1.6%
	Other benign findings	10	0.7%
Bladder	Normal	1367	96.9%
	Cystitis	22	1.6%
	Other Benign Findings	22	1.6%
Uterus	Normal	626	89.8%
	Myoma	57	8.2%
	Other Benign Findings	14	2%
Over	Normal	654	93.8%
	Cyst	40	5.7%
	Other Benign Findings	3	0.5%
Prostate	Normal	571	80%
	BPH	143	20%
FOB	(-)	777	55.1%
	(+)	42	3.0%
	Not performed	592	42.0%

Table 3. Thyroid, Breast Ultrasonography and Mammography Findings

		n	%
Thyroid US	Normal	55	3.8%
	TIRADS-1	523	37.1%
	TIRADS-2	676	47.9%
	TIRADS-3	87	6.2%
	TIRADS-4	53	3.8%
	Total Thyroidectomy	17	1.2%
Breast US	BIRADS-0	6	0.9%
	BIRADS-1	326	46.8%
	BIRADS-2	272	39.02%
	BIRADS-3	91	13.%
	BIRADS-4A	1	0.14%
	BIRADS-4C	1	0.14%
Mammography	Not performed	226	32.4%
Mammography	BIRADS-0	54	11.4%
	BIRADS-1	158	33.5%
	BIRADS-2	217	46.1%
	BIRADS-3	38	8.2%
	BIRADS-4	1	0.2%
	BIRADS-4A	1	0.2%
	BIRADS-4B	1	0.2%
	BIRADS-5	1	0.2%

In PA-Chest X-rays; minor findings were detected in 312, and major findings were in 36 cases, 15 of them had nodules in the lung parenchyma, 11 had suspected hilar LAP, 2 had suspected mediastinal LAP, 5 had infection findings, 3 had suspected aortic aneurysm and thoracic CT was recommended.

DISCUSSION

The advantages of radiological examinations performed for screening in healthy individuals can be listed as providing the chance of early diagnosis and treatment of cancer and psychological relief when no pathology is detected (9-23).

Abdominal US is the gold standard for the diagnosis of gallstones and also provides additional information about stone mobility, gallbladder size, and wall thickness (24). Polyps appear as echogenic lesions with regular contours that are located adjacent to the wall, do not have posterior dark shadowing, and change position (25).

The most appropriate method for spleen imaging and screening, including malignancy and hematological diseases, is US. To evaluate spleen diseases, it is necessary

to know the normal spleen size specifically according to race, gender, and community characteristics. The average accessory spleen incidence rate in Turkish society is 2.5%. The average spleen size in Turkish society is 10.76 cm. Above this size can be evaluated as splenomegaly. Detection of a mass, cyst, and splenomegaly in the spleen requires evaluation in terms of hematological and malignant diseases (26). The rate of splenomegaly in our cases was 1.6%.

CT and MRI examinations are quite effective in imaging the pancreas, but the pathological images that can be detected on US allow switching to these advanced imaging techniques and enable the detection of cystic and solid lesions of the pancreas at an early stage (27).

US is the first and gold standard examination in liver imaging. NAFLD is divided into two subtypes: simple steatosis and nonalcoholic steatohepatitis. Most cases of simple steatosis are not progressive, while nonalcoholic steatohepatitis can cause chronic liver damage and progressive fibrosis. Liver biopsy is the gold standard in the diagnosis of NAFLD, but noninvasive imaging methods are rapidly developing and can replace biopsy in some cases. These include newer imaging technologies such as US, US elastography, CT and MRI, and MRI-based fat quantification techniques (28). Fatty infiltration is seen as increased echogenicity in B-mode US. The degree of steatosis in the liver is usually reported as normal, mild steatosis, moderate steatosis, and severe steatosis after 8 hours of fasting (29). The most common benign liver tumor is hemangioma. It is typically seen as a hyperechogenic focus compared to the liver parenchyma. Cystic liver lesions are detected as anechoic lesions on US. However, cystic or necrotic malignant tumors or metastases should be considered for differential diagnosis. Hydatid cysts or cystadenomas should be considered in the differential diagnosis of simple-looking cysts. Benign liver tumor origin includes adenomas and Focal Nodular Hyperplasia (FNH). Adenomas developing due to estrogen-progesterone therapy can lead to intratumoral or intraperitoneal hemorrhage or, more rarely, Hepatocellular Carcinoma (HCC) degeneration. Therefore, early diagnosis is important. They are usually seen as hypoechoic masses with regular contours on US. For differential diagnosis, patient history and dynamic MRI examination are very useful. However, imaging cannot provide a definitive positive diagnosis of adenoma (30). Typical FNH is often seen on US as foci with unclear boundaries and slight echogenicity changes compared to the liver parenchyma. The lesion may be observed as slightly hypoechoic, isoechoic, or slightly hyperechoic. A hypoechoic halo may be observed due to compression of the parenchyma around FNH, especially in the setting of fatty liver. Doppler US application provides additional data on the vascularity of lesions suspected of FNH. It is very important to diagnose FNH to avoid unnecessary surgery. The

Table 4: Distribution of Liver and Gallbladder Findings by Gender

		Male (n:714)			Female (n:697)				p		
		Mean±ss/n-%		Median	Mean±ss/n-%		Median				
Age		50.8	±	13.2	51.0	49.8	±	13.2	49.0	0.128	^m
CEA		2.1	±	1.5	1.8	1.9	±	1.8	1.4	0.000	^m
Liver Hepatostetosis	(-)	241		33.8%		359		51.5%		0.000	^{x²}
	Grade I	335		46.9%		253		36.3%			
	Grade II	118		16.5%		71		10.2%			
	Grade III	20		2.8%		14		2.0%			
Liver Hepatomegaly	(-)	528		73.9%		579		83.1%		0.000	^{x²}
	(+)	186		26.1%		118		16.9%			
Liver Hemangioma	(-)	702		98.3%		678		97.3%		0.044	^{x²}
	One	12		1.7%		13		1.9%			
	More than one	0		0.0%		6		0.9%			
Liver Cyst	(-)	694		97.2%		673		96.6%		0.073	^{x²}
	One	17		2.4%		13		1.9%			
	More than one	3		0.4%		11		1.6%			
Gallbladder Stone	(-)	681		95.4%		649		93.1%		0.067	^{x²}
	(+)	33		4.6%		48		6.9%			
Gallbladder Polyps	(-)	659		92.3%		664		95.3%		0.026	^{x²}
	One	47		6.6%		24		3.4%			
	More than one	8		1.1%		9		1.3%			
Gallbladder Sludge	(-)	684		95.8%		686		98.4%		0.003	^{x²}
	(+)	30		4.2%		11		1.6%			

^m Mann-Whitney u test / ^{x²} Ki-square test

Table 5: Distribution of kidney findings by gender

		Male (n:714)		Female(n:697)		p	
		n	%	n	%		
Right Kidney Stone	(-)	698	97.8%	684	98.1%	0.619	X ²
	One	16	2.2%	11	1.6%		
	More Than one	0	0.0%	2	0.3%		
Right Kidney Cyst	(-)	616	86.3%	640	91.8%	0.001	X ²
	One	97	13.6%	57	8.2%		
	More than one	1	0.1%	0	0.0%		
Left Kidney Stone	(-)	694	97.2%	679	97.4%	0.800	X ²
	One	20	2.8%	18	2.6%		
Left Kidney Cyst	(-)	622	87.1%	641	92.0%	0.003	X ²
	One	90	12.6%	56	8.0%		
	More than one	2	0.3%	0	0.0%		

X² Ki-square test

sensitivity and specificity values of contrast-enhanced MRI in the diagnosis of FNH have been reported as 70% and 98% (31-32).

The first method used in the evaluation of the adrenal gland, kidney, bladder, and prostate is US. Bladder wall thickness, trabeculation, presence of diverticula, internal structure, pathologies such as stones, and intraluminal hematoma mass can be distinguished with US in a full bladder. Prostate dimensions and volume are measured to give an idea about prostate growth (33).

If a solid mass detected in the kidney on US does not contain fat and is seen to have a heterogeneous complex internal structure, RCC, oncocytoma and fat-poor adenoma should be considered in the diagnosis. The fat content of a mass can be easily distinguished in cross-sectional imaging methods such as MRI and CT. The most helpful modality in differential diagnosis is MRI (34).

US, CT, and MRI are used as imaging methods in the evaluation of gynecological pathologies. In gynecological oncological cases, US is the first-choice imaging method (35).

Table 6: Distribution of other intra-abdominal findings and FOB(+) status according to gender

		Male(n:714)		Female(n:697)		p	
		n	%	n	%		
Pancreas	Normal	709	99.3%	694	99.6%	0.500	X ²
	Steatoz	5	0.7%	2	0.3%		
	Other benign findings	0	0.0%	1	0.1%		
Stomach	Normal	711	99.6%	685	98.3%	0.147	X ²
	Antral wall thickening	3	0.4%	12	1.7%		
Spleen	Normal	693	97.1%	685	98.3%	0.147	X ²
	Splenomegaly	13	1.8%	10	1.4%		
	Other benign findings	8	1.1%	2	0.3%		
Bladder	Normal	693	97.1%	674	96.7%	0.023	X ²
	Cystitis	6	0.8%	16	2.3%		
	Other benign findings	15	2.1%	7	1.0%		
FOB	(-)	404	94.8%	373	94.9%	0.961	X ²
	(+)	22	5.2%	20	5.1%		

X² Ki-square test

Lung cancer is the leading cause of cancer-related death in the United States. Chest radiography is important in the initial evaluation. The National Lung Screening Trial showed that Low-Dose CT (LDCT) can reduce lung cancer deaths by 20% in high-risk patients compared with chest radiography. Patients with suspicious lesions on chest radiography may continue their evaluation with LDCT (36).

BIRADS has high diagnostic accuracy rates in distinguishing benign/malignant breast lesions (37). In our study, BIRADS-4/5 lesions were detected in approximately 0.28% of the cases that underwent breast US and 0.8% who underwent mammography, and biopsy was recommended.

TIRADS has high diagnostic accuracy rates in distinguishing benign/malignant thyroid nodules. Accordingly, biopsy should be performed in TIRADS-4 lesions. Studies comparing thyroid nodules reported according to the TIRADS with histopathological evaluation results have determined high diagnostic accuracy rates (38). In our study, the TIRADS-4 lesion rate was 3.8%.

The fact that 7% of cases who underwent colonoscopy due to FOB positivity had colorectal malignancy, and 19% had adenomatous polyps shows the importance of FOB positivity. Thanks to screening programs, colorectal cancers and precancerous lesions can be diagnosed early, and survival rates can be increased (39). In our study, FOB positivity was 3%.

The risk of developing colorectal cancer is higher in healthy individuals, especially those with anemia and CEA levels of 5 ng/ml and above than those with low CEA levels.

Anemia is an independent predictive factor in this case (40). In our cases, no significant increase in CEA level was detected.

CONCLUSION

Check-ups are not routinely implemented. Our study includes individuals who voluntarily participated in a health screening program. Although the sociocultural positions of these people do not represent the entire society, the results indicate that health screening programs can be effective in preventing complications that may occur due to benign lesions while indicating that premalignant lesions can be diagnosed early before malignancy develops. Therefore, check-ups significantly increase the quality of life and will be used more widely as health awareness increases in society.

Ethics Committee Approval: The approval of this study in accordance with the ethical rules of the Declaration of Helsinki was approved by the ethics committee of İstanbul Okan University at the meeting numbered 169 on 18.10.2023 with decision number 35.

Informed Consent: The study was conducted retrospectively.

Authorship Contributions: Concept: DD, KG, Design: DD, KG, Supervising: DD, Data collection and entry: DD, Analysis, and interpretation: KG, Literature search: DD, KG, Writing: DD, KG, Critical review: KG.

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