Original article

Primary liver tumors at a referral center in El Salvador

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Abstract
Introduction. Primary liver tumors are the third leading cause of cancer-related deaths worldwide and the sixth most common type of cancer. In El Salvador, up-to-date data on this disease, which limits the development of public health policies for its prevention and timely diagnosis. **Objective.** Determine the sociodemographic, clinical, diagnostic, therapeutic, and staging characteristics of patients with primary liver tumors treated at a referral center for hepatopancreatobiliary pathology at the Salvadoran Social Security Institute between 2016 and 2022. **Methodology.** Descriptive study based on a review of clinical records of patients with a confirmed diagnosis of primary liver tumors. **Results.** A total of 87 clinical records were included. This study aimed to determine, and the median age was 70 years, with most patients originating from urban areas. The most frequent symptoms were right upper quadrant pain, weight loss, and a palpable mass. The most commonly used diagnostic method was a combination of imaging studies and biopsy. The most common initial treatment was palliative care, followed by systemic chemotherapy, and surgical approach. Most patients were diagnosed at advanced stages. **Conclusion.** Hepatocellular carcinoma was the most common subtype in the study population. Most patients were diagnosed at advanced stages, highlighting the need to strengthen strategies for timely diagnosis and improve the quality of clinical record-keeping.

Keywords
Liver Neoplasms, Liver, Hepatocellular Carcinoma, Cholangiocarcinoma.

Resumen
Introducción. Los tumores primarios de hígado representan la tercera causa de muerte asociadas a cáncer mundialmente y es la sexta neoplasia más frecuente. En El Salvador, no se cuenta con datos actualizados sobre esta enfermedad, lo que limita el accionar en políticas públicas sanitarias para su prevención y diagnóstico oportuno. **Objetivo.** Determinar las características sociodemográficas, clínicas, diagnósticas, terapéuticas y de estadificación de pacientes con tumores primarios de hígado atendidos en un centro de referencia en patología Hepato-Pancreato-Biliar del Instituto Salvadoreño del Seguro Social, entre 2016-2022. **Metodología.** Estudio descriptivo, basado en la revisión de expedientes clínicos de pacientes con diagnóstico confirmado de tumores primarios de hígado. **Resultados.** Se incluyeron 87 expedientes clínicos. Predominó el sexo masculino y la mediana de edad fue de 70 años, con mayor procedencia del área urbana. Los síntomas más frecuentes fueron el dolor en hipocondrio derecho, la pérdida de peso y la tumoración palpable. El método diagnóstico más utilizado fue la combinación de estudios de imagen y biopsia. El tratamiento inicial más común fue el manejo paliativo, seguido de la quimioterapia sistémica y el abordaje quirúrgico. La mayoría de los pacientes se diagnosticó en estadios avanzados. **Conclusión.** El hepatocarcinoma fue el subtipo más frecuente en la población de estudio. La mayoría de los pacientes se diagnosticó en etapas avanzadas, lo que pone en evidencia la necesidad de fortalecer estrategias de diagnóstico oportuno y mejorar la calidad del registro clínico.

Palabras clave
Neoplasias Hepáticas, Hígado, Carcinoma Hepatocelular, Colangiocarcinoma.

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Introduction

Liver cancer is the sixth most common type of cancer and the third leading cause of death worldwide.[1] In El Salvador, there is little limited available data on the prevalence of liver cancer in the population.[2] Every year, the International Agency for Research on Cancer reports 38 400 new cases of primary liver cancer in Latin America and the Caribbean, with a total of 36 436 deaths.[3]

In El Salvador, the National Tumor Registry estimated that in 2013, cancer mortality in that country accounted for 9 % of all recorded hospital deaths. Likewise, the Ministry of Health of El Salvador states that between 2009 and 2013, malignant liver tumors accounted for 2.8 % of all tumors and ranked 11th in frequency nationwide.[2]

Liver tumors are classified as primary or secondary; the former are the focus of this study. Ninety percent of primary liver tumors are hepatocellular carcinomas, while 10 % are cholangiocarcinomas and other less common types. According to the American Joint Committee on Cancer, it is necessary to determine the histological type and classification or staging in order to determine the appropriate treatment.[3]

It is important to accurately characterize patients with primary liver tumors in El Salvador in order to identify the most vulnerable groups and implement screening strategies for early diagnosis. Furthermore, analyzing clinical and histopathological data provides valuable information regarding the most common types of liver tumors in El Salvador.

Surgery is the ideal curative treatment for all primary liver tumors. At the same time, there are other types of treatments available, such as cytoreductive surgery, local ablative therapy, tumor embolization, chemotherapy, immunotherapy, and targeted therapies for tumors in more advanced stages.[3] As cases are detected at advanced stages, treatments become more complex, expensive, and less likely to result in a definitive cure. This places an enormous burden on public health and the country's productivity.

This study aimed to determine the sociodemographic, clinical, diagnostic, therapeutic, and staging characteristics of patients with primary liver tumors treated at the Hepato-Pancreato-Biliary Center of the Medical-Surgical and Oncology Hospital of the Salvadoran Social Security Institute (MQ-ISSS) between 2016 and 2022.

Methodology

A descriptive study was conducted based on a review of medical records of patients diagnosed with primary liver tumors, including hepatocellular carcinoma and cholangiocarcinoma, who were treated at MQ-ISSS Hospital between 2016 and 2022.

The inclusion criteria were cases with a confirmed diagnosis of primary liver cancer. For hepatocellular carcinoma, the diagnosis was established by histopathology or radiological imaging studies, in accordance with current international guidelines that allow for non-invasive diagnosis when typical radiological patterns are present.[4,5] For cholangiocarcinoma, however, histopathological confirmation documented in the medical records was required.

Records with an incorrect diagnosis or without a definitive diagnosis were excluded. Information was considered insufficient when the record did not clearly identify the definitive tumor diagnosis or the basic variables necessary for sociodemographic, clinical, diagnostic, therapeutic, and staging characterization. Records lacking these data were also excluded from the analysis.

Data were collected using an observation form that included sociodemographic, clinical, diagnostic, and therapeutic variables. This instrument was previously validated through expert judgment and quantified using Aiken's V through an evaluation matrix completed by professionals with extensive professional experience in the research field; these experts assessed the instrument's consistency, clarity, and relevance. Sociodemographic variables included age, sex, place of origin, education level, marital status, and occupation. However, the occupation variable was classified according to the National Classification of Occupations of El Salvador (CNOES 2020), grouped into broad categories for descriptive purposes. Clinical variables included presenting symptoms, duration of illness, weight loss, and medical history recorded in the medical record. Weight loss was recorded during patient follow-up. Diagnostic variables included the recorded diagnostic method and histological type. Therapeutic variables included the initial treatment recorded following diagnosis.

For clinical characterization, both diagnostic groups included an assessment of performance status using the Eastern Cooperative Oncology Group (ECOG) scale, which evaluates the patient's quality of life.[5] In addition, clinical staging was performed according to the TNM system of the eighth edition of the AJCC, which considers tumor size (T), lymph node involvement (N), and the presence of metastasis (M).[6] For each disease, the corresponding classification was used; based on the oncology conference notes and imaging reports, patients were classified from stage I to IV. In patients with hepatocellular carcinoma, in addition to performance status and TNM staging, the following were also incorporated: the Child-Pugh classification, which determines the severity of liver disease by assessing the presence of ascites, bilirubin, albumin, prothrombin time, and degree of encephalopathy;[7]

the Albumin-Bilirubin Index (ALBI), which takes these laboratory parameters into account and is useful in predicting the course of patients with hepatocellular carcinoma;[5] and the Barcelona Clinic Liver Cancer (BCLC) classification, which includes the assessment of variables such as tumor stage, liver function, and symptoms to determine the prognosis and guide treatment decisions.[5] All clinical classifications (ECOG, TNM, Child-Pugh, ALBI, and BCLC) were recorded on the same observation form, using the information documented in the medical record at the time of diagnosis.

Statistical analysis was performed using Microsoft Excel 365 and IBM SPSS version 31. Quantitative variables were assessed using the Shapiro-Wilk test. Due to the skewed distribution of the data, quantitative variables were described using the median and interquartile range (IQR). Categorical variables were expressed as absolute frequencies and percentages.

Missing data identified in the medical records were not estimated, inferred, or replaced. Variables for which no data were recorded were listed as "not reported," as described in each record at the time of review, in order to preserve the integrity of the original data.

The study was approved by the Ethics Committee of the Evangelical University of El Salvador, Act No. 333, and endorsed by the local ethics committee of the MQ-ISSS Hospital, under code CEIS ISSS 2023-10. The ethical principles established in the Declaration of Helsinki were adhered to throughout the study. The information was handled confidentially and anonymously during analysis.

Results

A total of 248 medical records reporting primary liver tumors were identified during the study period. Of these, 152 were excluded due to an incorrect diagnosis or insufficient information to characterize the case. After the initial screening, 96 records were considered eligible. Following a detailed diagnostic review, nine additional records were excluded due to the lack of a definitive classification. The final sample consisted of 87 cases.

Hepatocellular carcinoma was the most common tumor type, with 65 cases (74.7 %), while 22 cases (25.3 %) were of cholangiocar cinoma. The sociodemographic and clinical characteristics of the study population are described below, presented both overall and stratified by tumor type.

The median age of the study population was 70 years (IQR 57-74), with the highest concentration of cases in the 68-77 age group (47.9 %). Males patients predominated in the entire study population and in the group diagnosed with hepatocellular carcinoma; however, women accounted for a higher proportion in the group with cholangiocarcinoma. Regarding geographic origin, most patients came from urban areas, primarily from the districts of San Salvador (33.3 %), Mejicanos (9.4 %), and Apopa (6.3 %); furthermore, most were referred from secondary (25.3 %) and tertiary (49.4 %) care centers. Regarding marital status, most patients were married in both diagnostic groups. The most common occupations were those classified as inactive (housewife and retirees), followed by activities related to services and commerce. In a high percentege of clinical files, there were no information registered about educational level. (Table 1).

In the study population, right upper quadrant pain was the most common clinical symptom, present in 74.7 % of all cases, followed by weight loss (60.9 %) and a palpable mass in the right upper quadrant (52.9 %). Jaundice and ascites were documented in 23.0 % of patients, in both hepatocellular carcinoma and cholangiocarcinoma cases. The median time from symptom onset to diagnosis was 12 weeks (IQR 8-24), with similar values between both tumor types. The median weight loss was 20 pounds in both diagnostic groups, with wide interquartile ranges, reflecting the variability in clinical course recorded in the medical records (Table 2).

In the study population, the most common diagnostic method was a combination of imaging studies (computed tomog raphy, ultrasound, and magnetic resonance imaging) and biopsy, accounting for 74.7 % of all cases across all diagnostic groups. The exclusive use of imaging studies was documented in 20.7 % of patients, all of whom had hepatocellular carcinoma according to non-invasive diagnostic criteria established in international guidelines. Biopsy as the sole diagnostic method was recorded in 4.6 % of cases, all of which were cases of cholangiocarcinoma. Initial treatment consisted primarily of palliative care (43.7 %), followed by systemic chemotherapy (31.0 %). Surgical treatment was documented primarily in patients with hepatocellular carcinoma (18.5 %); meanwhile, no surgical procedures were recorded in the patients with cholangiocarcinoma included in the analysis. Hepatic interventional procedures, such as transarterial chemoembolization (TACE) or transarterial embolization (TAE), alone or

Table 1. Sociodemographic characteristics of patients with primary liver tumors, MQ-ISSS Hospital, 2016–2022

Variable		Hepatocellular carcinoma n = 65	Cholangiocarcinoma n = 22	Total n = 87
		Median (IQR)	Median (IQR)	Median (IQR)
Age		70 (58–74)	72 (57–79)	70 (57–74)
		n (%)	n (%)	n (%)
Sex	Female	20 (30.8)	13 (59.1)	33 (37.9)
	Male	45 (69.2)	9 (40.9)	54 (62.1)
Education	High school	1 (1.5)	0 (0.0)	1 (1.1)
	High school	14 (21.5)	2 (9.1)	16 (18.4)
	University	20 (30.8)	8 (36.4)	28 (32.2)
	Not registered	30 (46.2)	12 (54.5)	42 (48.3)
Marital status	Married	56 (86.2)	19 (86.4)	75 (86.2)
	Single	9 (13.8)	3 (13.6)	12 (13.8)
Occupation	Professionals and managers	7 (10.8)	3 (13.6)	10 (11.5)
	Services and commerce	19 (29.2)	7 (31.8)	26 (29.9)
	Trades, operators, and agriculture	5 (7.7)	3 (13.6)	8 (9.2)
	Inactive (housewife and retired)	24 (36.9)	5 (22.7)	29 (33.3)
	Not registered	10 (15.4)	4 (18.2)	14 (16.1)
Origin	Rural	7 (10.8)	1 (4.5)	8 (9.2)
	Urban	58 (89.2)	21 (95.5)	79 (90.8)
Level of care at referral center	Primary care	4 (6.2)	0 (0.0)	4 (4.6)
	Second level	16 (24.6)	6 (27.3)	22 (25.3)
	Third level	32 (49.2)	11 (50.0)	43 (49.4)
	Private school	13 (20.0)	5 (22.7)	18 (20.7)

in combination with chemotherapy, were indicated in a small proportion of patients. In a smaller percentage of cases (4.6 %), no information regarding initial treatment was recorded in the medical records (Table 3).

Regarding nutritional status of the study population, most patients had a normal weight (54.0 %), followed by those who were overweight (26.4 %). Various degrees of obesity and underweight were identified in a smaller proportion of cases. Among comorbidities, hypertension was recorded in 52.9 % of patients, and diabetes *mellitus* in 26.4 %. A history of alcoholism was reported in 42.5 % of cases and a smoking in 26.4 %, with variations in their distribution depending on the type of tumor. The duration of alcohol consumption was underreported in 51.4 % of patients with a history of alcohol use, while the duration of tobacco use was not recorded in 56.5 % of patients with a history of smoking, which limited their inclusion as quantitative variables in the analysis. Hepatitis B and hepatitis C viruses were identified in 5.7 % of cases (Table 4).

In patients with hepatocellular carcinoma, assessment of performance status using the ECOG scale showed that most were in intermediate stages, with a predominance of ECOG PS 1 (36.9 %) and ECOG PS 2 (23.1 %); meanwhile, 18.5 % had an ECOG PS 3. In functional terms, an ECOG 1-2 indicates that the patient retains the ability for self-care and light activities, although they have limitations regarding intense physical exertion.[8] Regarding liver function, more than half of the patients with hepatocellular carcinoma were classified as Child-Pugh A (52.3 %), followed by Child-Pugh B (41.5 %). The Child-Pugh A classification indicates preserved liver function, whereas Child-Pugh B corresponds to moderate impairment of liver function.[9] The ALBI score showed a predominance of grade II (49.2 %), followed by grade III (29.2 %) and grade I (21.5 %). Grade I corresponds to better liver function, and grades II and III indicate progressive impairment of liver reserve.[10] Regarding the BCLC classification, a significant proportion of patients were in advanced stages, with a predominance of stage D (36.9 %) and stage C (27.7 %). BCLC stages C and D correspond to advanced and terminal disease, respectively.

Table 2. Clinical characteristics of patients with primary liver tumors, MQ-ISSS Hospital, 2016–2022

Variable	Hepatocellular carcinoma n = 65	Cholangiocarcinom n = 22	Total n = 87
	n (%)	n (%)	n (%)
Jaundice	17 (26.2)	3 (13.6)	20 (23.0)
Palpable mass in the right hypochondrium	37 (56.9)	9 (40.9)	46 (52.9)
Ascites	17 (26.2)	3 (13.6)	20 (23.0)
Right upper quadrant pain	47 (72.3)	18 (81.8)	65 (74.7)
Weight loss	39 (60.0)	14 (63.6)	53 (60.9)
	Median (IQR)	Median (IQR)	Median (IQR)
Time from symptom onset to diagnosis in weeks	12 (8–28)	12 (4–16)	12 (8–24)
Pounds lost	20 (12–30)	20 (15–40)	20 (15–40)

Table 3. Diagnostic methods and treatment for patients with primary liver tumors, MQ-ISSS Hospital, 2016–2022

Variable		Hepatocarcinoma n = 65	Colangiocarcinoma n = 22	Total n = 87
		n (%)	n (%)	n (%)
Diagnostic method	Imaging	18 (27.7)	0 (0.0)	18 (20.7)
	Biopsy	0 (0.0)	4 (18.2)	4 (4.6)
	Imaging + biopsy	47 (72.3)	18 (81.8)	65 (74.7)
Initial treatment following diagnosis	Palliative	29 (44.6)	9 (40.9)	38 (43.7)
	Chemotherapy	17 (26.2)	10 (45.5)	27 (31.0)
	Surgical	12 (18.5)	0 (0.0)	12 (13.8)
	TACE/TAE	1 (1.5)	1 (4.5)	2 (2.3)
	TACE/TAE + Chemotherapy	4 (6.2)	0 (0.0)	4 (4.6)
	Not recorded	2 (3.1)	2 (9.1)	4 (4.6)

Table 4. Medical and personal history of patients with primary liver tumors, MQ-ISSS Hospital, 2016–2022

Variables		Hepatocarcinoma n = 65	Colangiocarcinoma n = 22	Total n = 87
		n (%)	n (%)	n (%)
Nutritional status (Body Mass Index)	Underweight	3 (4.6)	0 (0.0)	3 (3.4)
	Normal weight	35 (53.8)	12 (54.5)	47 (54.0)
	Overweight	18 (27.7)	5 (22.7)	23 (26.4)
	Class I obesity	6 (9.2)	4 (18.2)	10 (11.5)
	Class III obesity	1 (1.5)	0 (0.0)	1 (1.1)
	Not recorded	2 (3.1)	1 (4.5)	3 (3.4)
Medical and personal history	High blood pressure	30 (46.2)	16 (72.7)	46 (52.9)
	Diabetes *mellitus*	17 (26.2)	6 (27.3)	23 (26.4)
	Hepatitis C	2 (3.1)	0 (0.0)	2 (2.3)
	Hepatitis B	2 (3.1)	1 (4.5)	3 (3.4)
	Alcoholism	31 (47.7)	6 (27.3)	37 (42.5)
	Smoking	21 (32.3)	2 (9.1)	23 (26.4)

A higher concentration of cases in advanced stages was revealed by NM staging, particularly stages IV-a and IV-b, which together accounted for more than half of the cases of hepatocellular carcinoma. These advanced stages are associated with locally advanced or disseminated disease and limit curative treatment options.[11] In patients with cholangiocarcinoma, clinical characterization showed a predominance of ECOG performance status 1 (72.7 %), followed by ECOG 2 and ECOG 3, both accounting for 13.6 % of cases. TNM staging revealed that most cases were in advanced stages, with a predominance of stages IV-a (54.5 %) and IV-b (31.8 %); where a smaller proportion corresponded to stage III (Table 5).

Discussion

This study describes the sociodemographic and clinical characteristics of patients with primary liver tumors treated at the Hepato-Pancreato-Biliary Diseases referral centerr at MQ-ISSS.

In this study, hepatocellular carcinoma was the most common subtype of primary liver tumor, accounting for approximately three-quarters of the cases analyzed. This finding is consistent with the literature, where hepatocellular carcinoma accounts for approximately 90 % of primary liver tumors.[12-14] Cholangiocarcinoma, meanwhile, accounted for one-quarter of the cases in the study population, a proportion that falls within the range reported in previous studies.[12,15]

The region known as CA-4 has the highest incidence rates in the Western Hemisphere. It is estimated that cancer rates will increase by up to 73 % by 2030.[16]

In this study, the majority of cases occurred in older adults, with a predominance of males, who were 1.6 times more frequently affected than females. These findings are consistent with the literature, which describes a higher frequency of hepatocellular carcinoma in elderly patients and a higher prevalence in men, with reported ratios of up to 4:1 and variations depending on geographic region.[14,17-20]

The majority of cases came from urban areas, which could be attributed to these patients' greater access to health care services and to the fact that, given the characteristics of the study population, formal employment is concentrated in these areas. This pattern aligns with data from a 40-year study conducted in China that assessed the geographic distribution of this type of tumor, which found that the incidence and mortality of these tumors increased in more urbanized areas.[21]

In this study, the most common clinical manifestations were right upper quadrant pain, weight loss, and a palpable mass. No relevant differences were observed in clinical presentation between hepatocellular carcinoma and cholangiocarcinoma, nor in the time elapsed between symptom onset and diagnosis. These findings are consistent with the literature, which reports that the most common manifestations include abdominal pain, ascites, weight loss, a palpable mass, and jaundice.[3] However, the frequency of jaundice found in this study was lower than that reported in previous studies.

The median weight loss in this study is similar to that reported by Perisetti *et al.*,[22] who found that sarcopenia occurs in the early stages of liver cancer. An important point to consider is that there is no body mass index (BMI) value available at disease onset, as it is estimated that advanced sarcopenia is present in 30-40 % of patients with liver cancer, which could explain why most patients have an adequate BMI without being able to determine baseline BMI or accuratelyassess actual weight loss.[16]

The diagnosis of primary liver tumors is generally made using dynamic imaging methods in hepatocellular carcinoma, or via biopsy in cases that cannot be adequately characterized by imaging.[23,24] Currently, a dynamic imaging studies are considered as effective as a histopathological evaluation for diagnosing the type of liver tumor. In El Salvador, the availability of advanced dynamic imaging studies and liver biopsies may be limited to tertiary care hospitals, which limits timely access in some cases. In this study, as it was conducted at a national referral center, the diagnosis was established primarily through a combination of imaging studies and biopsy with histopathological evaluation. Computed tomography was the most frequently used imaging method.

A notable finding in this region is that hepatitis virus infection was identified in only a small number of patients, which differs from the findings of various studies in which more than 50 % of hepatocellular carcinoma cases are associated with hepatitis virus infection.[25,26] Some authors have reported that 78 % of patients with hepatocellular carcinoma are carriers of hepatitis B and C viruses; and that these viruses are responsible for the majority of cases of cirrhosis and hepatocellular carcinoma; these findings contradict those obtained in this study, which showed an incidence much lower than that described by various authors.[27,28] According to

Table 5. Advanced clinical characterization by tumor type, MQ-ISSS, 2016–2022

	Variable	Category	n (%)
Hepatocellular carcinoma	Performance status (ECOG)	0	14 (21.5)
		1	24 (36.9)
		2	15 (23.1)
		3	12 (18.5)
	Liver function (Child–Pugh)	A	34 (52.3)
		B	27 (41.5)
		C	4 (6.2)
	ALBI Index	I	14 (21.5)
		II	32 (49.2)
		III	19 (29.2)
	BCLC classification	A	8 (12,3)
		B	15 (23.1)
		C	18 (27.7)
		D	24 (36.9)
	TNM staging for hepatocellular carcinoma	I	1 (1.5)
		II	6 (9.2)
		III	12 (18.5)
		IV	10 (15.4)
		IV-a	18 (27.7)
		IV-b	18 (27.7)
Cholangiocarcinoma	Performance status (ECOG)	1	16 (72.7)
		2	3 (13.6)
		3	3 (13.6)
	TNM staging for cholangiocarcinoma	III	3 (13.6)
		IV-a	12 (54.5)
		IV-b	7 (31.8)

institutional protocol, all patients diagnosed with a liver tumor undergo screening for viral hepatitis; therefore, all cases had a hepatitis evaluation documented in the medical record.

In most patients in the study, a higher frequency of cases classified as ALBI grade II was identified. The ALBI score is not routinely used in El Salvador, and the most commonly used classification remains the Child-Pugh score, even though the ALBI score is more sensitive in detecting subtle changes in liver function. Most of the patients studied were found to have preserved liver function (Child-Pugh A). According to one study, patients in ALBI Group I correspond to those classified as Child-Pugh A; however, those in ALBI Group II had a different Child-Pugh score; these data differ from the results of this study, which could be due to the fact that ascites and encephalopathy are subjective variables.[29]

Nearly half of the patients had an ECOG PS1, findings similar to those reported in a study that found that 40 % of patients diagnosed with hepatocellular carcinoma had an ECOG score greater than zero at the time of diagnosis.[29] Most patients with cholangiocarcinoma had an ECOG PS1. Therefore, most patients had good functional status; their main disadvantage was an advanced clinical stage, which led to palliative treatment in most cases.

In this study, most cases were classified as BCLC-D, followed by BCLC-C and BCLC-B. These findings are consistent with those reported by various authors, who indicate that most cases are in intermediate (BCLC-B) and advanced (BCLC-C and D) stages.[4,19] The implications of these results are that most patients in the study are not candidates for any type of curative therapeutic procedure.

A smaller proportion of patients in this study were classified as BCLC-A (early stage) and were therefore candidates for surgical treatment. This finding is consistent with international data indicating that approximately two-thirds of cases are diagnosed at advanced stages and are not candidates for surgery.[30] Based on the above, the most common initial treatment was palliative care, and surgery was performed in only a minority of patients with hepatocellular carcinoma and in no patients with intra-

hepatic cholangiocarcinoma. Only 6.9 % of both groups were candidates for systemic and locoregional treatment, which included systemic chemotherapy, interventional procedures such as TAE/TACE, and ablations.

Accurate staging is important for determining prognosis and selecting the appropriate treatment. In this study, clinical staging using the TNM system revealed that a significant proportion of patients were diagnosed at advanced stages of the disease. In cases of hepatocellular carcinoma, most patients were classified as stages III and IV (including IV, IV-a, and IV-b); whereas, in cholangiocarcinoma, all cases corresponded to advanced stages, with a predominance of stages IV-a and IV-b. These findings are consistent with the literature, which describes that up to 70 % of patients with primary liver tumors are diagnosed at advanced stages,[31] which limits curative treatment options and leads to a poorer prognosis. Therefore, although most patients were in good functional condition, their advanced stage meant that non-curative treatment was the most appropiate option.

This study has several limitations that should be taken into account. The retrospective, single-center design limited the availability and quality of the recorded data, with missing data observed for some variables, primarily due to underreporting in clinical records. The results reflect the experience of a national referral hospital for primary liver tumors and are not intended to be extrapolated to the general population, particularly to patients treated at other levels of the healthcare system. The descriptive scope of the study limits the interpretation of the findings; therefore, no associations or causal relationships are established between the analyzed variables. The absence of histopathological reports reflects limitations in the clinical records, not necessarily the absence of a diagnostic procedure.

Despite these limitations, the findings provide relevant information on the presentation and management of primary liver tumors at the Salvadoran Social Security Institute and serve as a useful resource for strengthening healthcare processes and guiding future research in the country.

Conclusions

At MQ-ISSS Hospital, hepatocellular carcinoma was the most commonly identified primary liver tumor between 2016 and 2022, while cholangiocarcinoma accounted for a smaller proportion of the cases treated. The study population was characterized by advanced age, with a predominance of male patients from urban areas.

In both diagnoses, the majority of cases were detected at advanced clinical stages, with symptoms such as right upper quadrant pain, weight loss, and a palpable mass; this is reflected by the predominant use of palliative care as the initial treatment and in the distribution of unfavorable clinical classifications among patients with primary liver tumors.

These findings highlight the need to strengthen strategies for the early detection of primary liver tumors and to improve the quality of documentation in medical records, in order to promote early diagnosis and optimize the therapeutic management of the disease in the country.

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