Descriptive epidemiology of viral hepatitis cases notified in a university hospital

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Epidemiología descriptiva de casos de hepatitis viral notificados en un hospital universitario

RESUMO

Objetivo: Objetivou-se analisar o banco de dados da instituição a partir da mudança conceitual na definição de caso. Método: Realizou-se a epidemiologia descritiva das hepatites virais notificadas no período de 2012 a 2018, a partir da utilização de dados secundários. Incluíam-se todos os casos suspeitos, confirmados e surtos. Resultados: No período estudado, foram notificados 3.271 casos provenientes de 10 estados federados sendo que 59,92% (n=1960) eram adultos jovens, de 20 a 49 anos, com predomínio de 9% para o sexo masculino; e 84,59% (n= 2.767) eram pardos. Do total de casos, 35,74% apresentavam coinfecção ao Vírus da Imunodeficiência Humana (HIV) e 64,93% das notificações foram descartadas. As variáveis relacionadas à fonte de infecção, forma clínica e classificação etiológica apresentaram mais de 75% dos campos incompletos. Conclusão: A realização deste estudo possibilitou o conhecimento do perfil epidemiológico dos casos e tornou possível a verificação do avanço obtido na qualificação dos dados.

Descritores: Epidemiologia descritiva; Hepatite Viral; Qualidade dos dados.

ABSTRACT

Objective: The objective was to analyze the institution's database from the conceptual change in the case definition. Method: Descriptive epidemiology of viral hepatitis reported in the period from 2012 to 2018, using secondary data. All suspected cases, confirmed cases and outbreaks were included. Results: During the study period, 3,271 cases were reported from 10 federated states, 59.92% (n=1960) were young adults, aged 20 to 49 years, with a predominance of 9% for males; and 84.59% (n=2,767) were brown. Of the total cases, 35.74% had Human Immunodeficiency Virus co-infection and 64.93% of the notifications were discarded. Variables related to the source of infection, clinical form and etiological classification showed more than 75% of incomplete fields. Conclusion: This study allowed for the knowledge of the epidemiological profile of the cases and made it possible to verify the progress achieved in qualifying the data.

Keywords: Descriptive epidemiology; Viral Hepatitis; Data quality.

RESUMEN

Objetivo: El objetivo fue analizar la base de datos de la institución a partir del cambio conceptual en la definición de caso. Método: Epidemiología descriptiva de las hepatitis virales notificadas en el período 2012 a 2018, utilizando datos secundarios. Se incluyeron todos los casos sospechosos, casos confirmados y brotes. Resultados: Durante el período de estudio se notificaron 3.271 casos de 10 estados federados, el 59,92% (n = 1960) fueron adultos jóvenes, de 20 a 49 años, con predominio del 9% para el sexo masculino; y el 84,59% (n = 2.767) eran mestizos. Del total de casos, el 35,74% tenía coinfección por Virus de la Inmunodeficiencia Humana y el 64,93% de las notificaciones se descartaron. Las variables relacionadas con el origen de la infección, la forma clínica y la clasificación etiológica mostraron más del 75% de campos incompletos. Conclusión: Este estudio permitió conocer el perfil epidemiológico de los casos y permitió verificar los avances logrados en la calificación de los datos.

Palavras-chave: Epidemiología descriptiva; Hepatitis viral; Calidad de los datos.

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INTRODUCTION

Viral hepatitis impacts public health worldwide, contributing to the loss of quality of life for patients and contacts, increasing the costs generated in the Unified Health System (SUS) and requiring efforts to develop effective measures for health promotion and surveillance, as well as disease prevention and control. They have wide magnitude, universal distribution and regional peculiarities. 1,2

This pathology is characterized by an inflammation of the liver (necroinflammatory process), caused by different etiological agents, the most relevant being viruses A (HAV), B (HBV), C (HCV), D (HDV) and E (HEV). Viral hepatitis A and E can be transmitted via the fecal-oral route (causing self-limited liver disease), while hepatitis B, C and D are transmitted by blood, sexual contact and body fluids (responsible for acute, chronic hepatitis, cirrhosis and hepatocellular carcinoma). Man is the only reservoir of epidemiological importance. They present differences in the type of viral genome, molecular structure and taxonomic classification, and often cause nausea, vomiting, malaise, headache and loss of appetite in the initial phase of the disease in the initial phase of the disease. Later, there is the appearance of coluria (dark urine) and acolia (white stools) and, finally, the jaundiced phase (yellow skin and eyes) begins, which, in general, coincides with changes in liver function tests. 1,3

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Worldwide, hepatitis A is the most frequent. Specifically in developed countries, viral hepatitis (B and C) are the ones that cause the greatest impact due to the morbidity and mortality generated by chronic liver disease. 4 In Brazil, the proportional distribution of cases varies among the five Brazilian regions. Data from the Epidemiological Bulletin of Viral Hepatitis 4 reveal that the Northeast region stands out in cases of A virus infections; the Southeast region has the highest proportions of B and C viruses; and the North region has a greater number of cases of hepatitis D (or Delta).

Due to its importance and relevance, since 1996 viral hepatitis has been included in the National Compulsory Notification List of diseases, injuries and public health events. As of 2017, notification was instituted only for confirmed cases and outbreaks, which must be registered in the Notifiable Diseases Information System (SINAN). In this way, suspected cases would no longer be subject to compulsory notification, as previously advocated. [1]

According to Cordeiro and D'Oliveira [2] "for surveillance to work efficiently, it is necessary that disease records present quality with regard to the information contained in the notification form" (p.2). It is understood that the quality of data from information systems provides the differential in the excellence of a service provided,

as they subsidize actions that address reality, making the obstacles found possible to find the best solutions to solve the problem. In addition to quantitative data referring to notifications and confirmations of injuries, it is noteworthy that incompleteness can generate misinterpretations regarding the prioritization of necessary actions.

Due to the verification of a large number of notifications of viral hepatitis and the need to redefine strategies after the conceptual change introduced in the Health Surveillance Guide (2017), this study aimed to carry out the descriptive epidemiology of cases of Viral Hepatitis reported in the HDT-UFT and describe the completeness and inconsistency of some variables, in the period from 2012 to 2018.

METHOD

This study is the result of the Training Program in Epidemiology Applied to the Services of the Unified Health System (EpiSUS-Fundamental), carried out in the state of Tocantins, in 2019. 4 EpiSUS was implemented in 2000 with the aim of filling some important gaps regarding the training of Brazilian sanitarists and epidemiologists. It was articulated with a view to contributing so that professionals and services could respond, in an effective and timely manner, to the challenges posed by public health emergencies. In 2017, the EpiSUS-Fundamental modality was implemented in order to strengthen the National Health Surveillance System, through the training of professionals working in the area of health surveillance of the SUS at the local level, in order to improve the detection capacity, response and communication of public health problems. 4

A descriptive epidemiological study of cases of viral hepatitis reported at the HDT-UFT, in the period from 2012 to 2018, was carried out using secondary data obtained from the SINAN, extracted through TabWin.

The study was carried out at the Hospital for Tropical Diseases of the Federal University of Tocantins (HDT-UFT), located in the municipality of Araguaína.

Due to the verification of a large number of notifications of viral hepatitis and the need to redefine strategies after the conceptual change introduced in the Health Surveillance Guide (2017), this study aimed to carry out the descriptive epidemiology of cases of Viral Hepatitis reported in the HDT-UFT and describe the completeness and inconsistency of some variables, in the period from 2012 to 2018

The hospital in question is specialized and is a reference in Tropical Diseases for the entire state and for the northern region of Brazil, with a focus on infectious and parasitic diseases and accidents with venomous and wild animals. Among the specialties, there is hepatology, and in their routine, all patients from the infectology clinic linked to the STI/AIDS program (PLHIV - People Living with HIV) undergo serological investigation related to various diseases and conditions, among them, viral hepatitis. At the institutional level, the HDT-UFT Hospital Epidemiological Surveillance is linked to the Health Surveillance Unit, inserted in the Quality Management and Patient Safety Sector, being operated through the Epidemiology Hospital Nucleus (Núcleo Hospitalar de Epidemiologia - NHE).

For case definition, according to the Health Surveillance Guide 5 all suspected and confirmed cases of viral hepatitis were included, according to the following categorization: 1. Symptomatic jaundiced patients, with or without symptoms such as fever, malaise, nausea, vomiting, myalgia, coluria and fecal hypocolia; 2. Symptomatic anicteric patients, presenting one or more symptoms such as fever, malaise, nausea, vomiting, myalgia and that in the laboratory investigation presents an increased value of aminotransferases; 3. Asymptomatic patients including: a person reporting a confirmed case of hepatitis; individual exposed to a well-documented source of infection; or an individual with an alteration in serum aminotransferases equal to or greater than three times the maximum normal value of these enzymes, according to the method used.

Data collection took place in December 2018 from the study variables, divided into four blocks, described below: 1. sociodemographic (age, gender, race, education, area of residence, state of residence); 2. complementary to the case (vaccination, HIV co-infection, other STDs); 3. closure (final classification, clinical form, etiological classification, source of infection); and 4. completeness of data.

For data analysis, data were extracted from Sinan, through TabWin and, later,

compiled and organized in Excel spreadsheets to be analyzed and interpreted, being structured in tables and figures. To define the completeness of the data, SINAN version 5.0 was used, 6,7 which presents the following definitions regarding the amount of incomplete data: good completeness (25% or less); regular (between 25,1 and 50,0%); bad (between 50,1 and 75,0%); and very bad (those with 75,1% or more).

All necessary ethical aspects were respected, following Resolution No. 466/12 of the National Health Committee, which regulates research with regard to the confidentiality and confidentiality of patient data. Considering that only secondary data were used to carry out the research, there was no need for a substantiated opinion from the CEP.

RESULTS

Case epidemiology

In the period from 2012 to 2018, 3.271 cases of viral hepatitis were reported, with an average of approximately 467,28 cases per year.

The patients notified came from 10 federated units, with emphasis on the following states: Tocantins (88,41%; n=2.892), Pará (7,80%; n=255) and Maranhão (3,33%; n= 109).

It was observed that 54,36% (n=1.778) of the notifications were from males. In general, the age ranged from 0 to 101 years, with a mean age of 33,22 years and a median of 33 years. It was noticed that there was a predominance of notifications in young adult patients, aged 20 to 49 years, represented in 59,92% (n=1.960) of notifications. As for race, in both sexes, there was a predominance of browns, with 84,59% (n=2.767) of the cases. The predominant level of education presented was incomplete primary education (between 5th and 8th grade), followed by complete secondary education, which together account for 41,78% of notifications (n=1.366), as shown in Table 1.

Regarding hepatitis B vaccination, the study revealed that 44,79% (n=1.465) were

Table 1 - Distribution of cases of viral hepatitis reported in a tropical and infectious disease hospital in Tocantins, according to sex, age group, education level and race/skin color, in the period from 2012 to 2018

Variables		N	%
Gender			
	Male	1778	54,36
	Female	1493	45,64
Age Group			
	<1 Year	122	3,73
	1-4	102	3,12
	5-9	130	3,97
	10-14	126	3,85
	15-19	217	6,63
	20-34	1075	32,86
	35-49	885	27,06
	50-64	482	14,74
	65-79	112	3,42
	80 and +	20	0,61
Education			
	Ign/Blank	169	5,17
	Illiterate	110	3,36
	Incomplete 1st to 4th grade of Elementary School	289	8,84
	Complete 4th grade of Elementary School	111	3,39
	Incomplete 5th to 8th grade of Elementary School	683	20,88
	Complete Elementary School	125	3,82
	Incomplete High School	394	12,05
	Complete High School	683	20,88
	Incomplete Higher education	183	5,59
	Complete Higher Education	249	7,61
	Does not apply	275	8,41
Ethnicity			
	Ign/Blank	3	0,09
	White	361	11,04
	Black	103	3,15
	Yellow	**14**	**0,43**

not vaccinated; 21,43% (n=701) were fully vaccinated; 10,73% (n=351) had incomplete vaccination and in 23,05% (n=754) this field was ignored or not filled out. In terms of vaccination for Hepatitis A, the study showed that 73,34% (n=2.399) of notified patients were not vaccinated; 4,31% (n=141) had incomplete vaccination; 1,90% (n=62) had the complete vaccine and 20,45% (n=669) had the information blank or ignored at the time of notification.

Of the total number of notified cases, 35,74% (n=1.169) had HIV co-infection, while 30,66% (n=1.003) did not have this diagnosis at the time of notification. It is important to note that 33,60% (n=1.099) of the cases had an ignored or blank field (Figure 1). In the case of other STDs, the results showed an inversion in this situation with 51,97% (n=1.700) of notifications without presentation of another sexually transmitted infection and 3,55% (n=116) of cases stating their presence. Similarly to HIV coinfection, the high number of ignored or blank notifications stands out, accounting for 44,48% (n=1.455). Regarding the frequency of other STDs, it is important to mention that the year 2014 had the highest percentage of incomplete information (12,93; n=425) and that the year 2018 had the lowest percentage (0,55; n=18).

As for the final classification (Figure 2), it was found that 64,93% (n=2.124) of notifications were discarded; 12,72% (n=416) were laboratory confirmed; 11,10% (n=363) are presented as inconclusive; 10,21% (n=334) were blank or ignored; and 1,04% (n=34) had serological scarring.

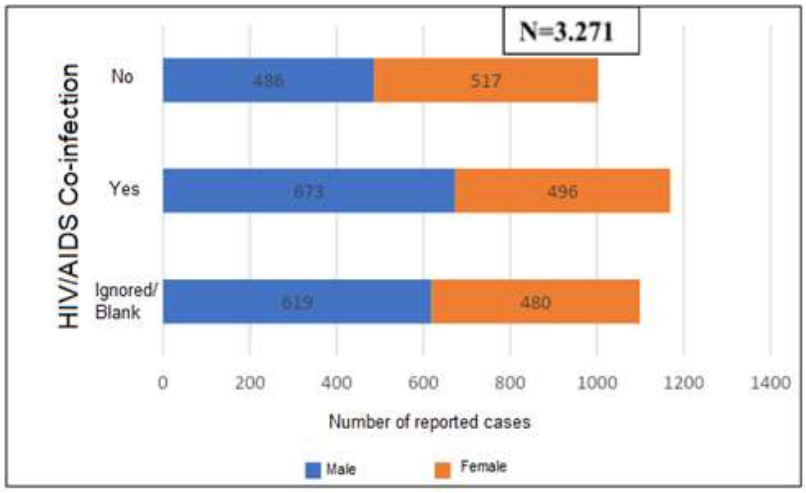
Among the confirmed cases, the etiological classification presented the following characterization (Figure 3): virus B in 42,86% (n=169); virus A in 39,58% (n=168); and virus C in 17,56% (n=75). And in relation to the clinical form, it was found that 6,45% (n=211) had an acute form; 6,24% (n=204) had the chronic form; and 87,31% (n=2856) were blank or ignored.

Data Quality

	Brown	2767	84,59
	Indigenous		

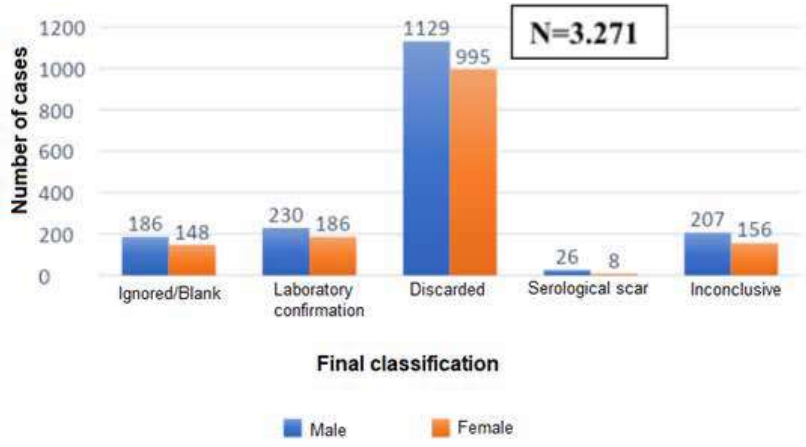
Source: SINAN, accessed in 02/14/2019.

Figure 1 – Frequency of notified cases with HIV/AIDS co-infection, by sex, in the period 2012 to 2018



Source: SINAN, accessed in 02/14/2019.

Figure 2 - Frequency by final classification of notifications of Viral Hepatitis, by gender, in the period 2012 to 2018



Source: SINAN, accessed in 02/14/2019.

The analysis of data completeness revealed that the identification variables "gender", "age" and "State of residence" had 100% of the fields filled out. The variables of race, education, area of residence, vaccination and final classification showed good completeness, with less than 25% of incomplete fields (Table 2). It is noteworthy that the completeness related to hepatitis B vaccination showed 23,00% of the fields blank or ignored and even if it is classified as "good completeness", this information is considered relevant and important to be addressed.

The variables related to "HIV co-infection" and the presence of "other STDs" show regular completeness, with 33,60% (n=1.099) and 44,48% (n=1455), respectively (Table 1). The years 2013 and 2014 represented the years with the greatest incompleteness for HIV co-infection (32,58% and 21,47%) and the presence of other STDs (24,95% and 29,21%). The subsequent years showed progressive improvement in data quality, reaching, in 2018, 1,46% (n=16) of ignored (or blank) fields for HIV co-infection and 0,55% (n= 18) for other STD's, shown in Table 3 below.

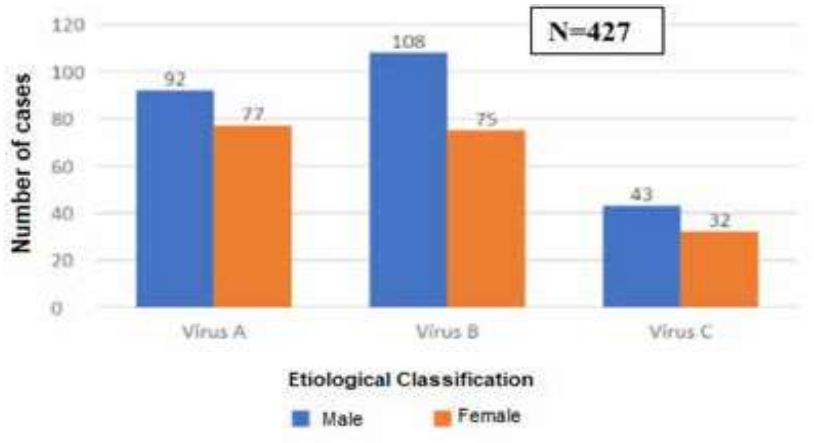
Variables related to the source of infection, clinical form and etiological classification presented completeness classified as "very bad", with more than 75% of incomplete fields.

DISCUSSION

From the analysis of the database of Viral Hepatitis at the Hospital for Tropical Diseases of the Federal University of Tocantins (HDT-UFT), the relevant number of notifications made in the institution was found, a fact that can be explained by the fact that it is a unit reference for the monitoring of infectious diseases and for having a hepatology clinic. In addition, this high number is due to the fact that, during a large part of the study period, suspected cases were included as a criterion for making the notifications. Thus, there was an increase of 543,21% in the absolute number of notifications during the period analyzed, ranging from 81 cases in 2012 to 521 in 2018.

Regarding the sociodemographic analysis, it was observed that there was a predominance of the brown race, explained by the fact that the population studied is mostly from the northern region of the country. Regarding education, it was found that most individuals had incomplete primary education and completed high school. It was also observed that males had a 9% higher percentage and that, in both sexes, there was a predominance of notifications in young adult patients, aged 20 to 49 years, this population being considered sexually active. Similar results were found in the studies 8,9,10 whose highest rates of

Figure 3 - Frequency by etiological classification of notifications of Viral Hepatitis, according to sex, in the period from 2012 to 2018



Source: SINAN, accessed in 02/14/2019.

Table 2 – Classification of the completeness of the study variables, in the period from 2012 to 2018

		%	Fullness	Classification caption
Source of Infection	2957	90,40	Very bad	with ≥ 75,1% of incomplete fields
Clinical form	2856	87,31	Very bad	with ≥ 75,1% of incomplete fields
Etiological classification	2843	86,92	Very bad	with ≥ 75,1% of incomplete fields
Other STDs	1455	44,48	Regular	between 25,1 and 50,0% of incomplete fields
HIV/AIDS Coinfection	1099	33,60	Regular	between 25,1 and 50,0% of incomplete fields
Hep B Vaccine Frequency	754	23,05	Good	≤ 25,0% of incomplete fields
Hep A Vaccine Frequency	669	20,45	Good	≤ 25,0% of incomplete fields
Final classification	334	10,21	Good	≤ 25,0% of incomplete fields
Education	169	5,17	Good	≤ 25,0% of incomplete fields
Residence area	23	0,7	Good	≤ 25,0% of incomplete fields
Ethnicity	3	0,09	Good	≤ 25,0% of incomplete fields

Source: SINAN, accessed in 02/14/2019.

sexually transmitted infections were in this age group.

The worrying element found in the study concerns the incompleteness of the data referring, mainly, to the co-infection with HIV, considering that 33,60% of the notifications were without this information. On the other hand, in relation to the same variable, it is noteworthy that the year 2013 (32,58%; n=358) had the largest representation of incompleteness in this field and that there was a significant decrease in each subsequent year, with only 1,46% (n=16) of open or ignored fields in 2018, verifying a significant improvement in data qualification.

Table 3 – Completeness of variables related to associated health problems, by year of study, from 2012 to 2018

Year	N (HIV coinfection)	%	N (other STD's)	%
2012	80	7,28	80	5,50
2013	358	32,58	363	24,95
2014	236	21,47	425	29,21
2015	193	17,56	339	23,30
2016	119	10,83	142	9,76
2017	97	8,83	88	6,05
2018	16	1,46	18	1,24
TOTAL	1099	100,00	1455	100,00

Source: SINAN, accessed in 02/14/2019.

In terms of aspects related to vaccination, and corroborating other studies, 10,13 the authors alert primary care services considering the low percentage of vaccination coverage. In addition, this data may be linked to the fact that notifications are made without the presence of the patient and that the medical record does not contain a copy of the vaccination card.

The high number of discarded notifications in the final classification, as opposed to confirmed ones, is explained by the case definition used in most of the study period, as mentioned above. It is noteworthy that in the years 2017 and mid-2018 notifications for suspected cases were still carried out due to the need for the Public Health Laboratory of Tocantins - Lacen. In March 2018 there was an agreement with the laboratory, and it is possible to fill in the notifications only for confirmed cases, as recommended. [1]

Regarding the confirmed cases identified in this study, it is understood that this number may be related to the profile of the hospital that serves as a reference for hepatology and receives many cases of patients with cirrhosis. In the analysis, no relevant difference was observed in the etiological classification between viruses A, B and C. Thus, the need for vaccination against HAV is reinforced, especially for the public that has co-infection with HIV.

Taking into account that the institution is a reference unit for the care of PLHIV, it is important to bear in mind that the approach to sexual issues needs to overcome ingrained stigmas and prejudices so that it is possible to respect the uniqueness of each subject. 10,13

Compared to the study 11 which indicated 77% of the reported cases already in the chronic form, it was found that in this study there was no relevant difference between the clinical forms. Another study 12 brought a greater proportion of diagnoses in the chronic phase, often in asymptomatic patients. It is understood that this is an extremely important point to be highlighted, since early diagnosis is proportional to a more effective prognosis, and that viral hepatitis is preventable and curable.

CONCLUSION

Viral hepatitis represents a serious public health problem due to its high prevalence, incidence and mortality rate. Epidemiological studies make it possible to know the aspects and distribution of the disease both in Brazil and in any other region where there is variation in its magnitude and prevalence with regard to the etiological agents.

Carrying out the descriptive epidemiology of hepatitis is a simple step, but it has a great impact to support the monitoring and qualification of the data and to remedy the present incompleteness. The importance of the existence of routines and trained professionals for the development of this activity is verified.

From the analyzed data, it was possible to know the epidemiology of viral hepatitis in the institution and verify that there was an improvement in the qualification of the information of some of the studied variables, such as HIV co-infection and the presence of other STDs, with progressive improvement from the year 2014 and onwards. In addition, another extremely important form refers to the presence of the patient at the time of notification.

An aggravating point in HDT-UFT is the fact that, routinely, notifications are carried out exclusively by the Health Surveillance Sector and, therefore, the patient is not always present.

The study provided the insertion of actions into the routine of notifications, such as periodic training with professionals working in the epidemiology center, as well as the request for access to the Information System of the National Immunization Program (SIPNI - Sistema de Informações do Programa Nacional de Imunizações) to enter data related to vaccination, since, in most cases, the patient does not have the vaccination card (or there is no copy of it in the medical record).

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