

Prevalence of Nephroblastoma in Children from 0 to 15 Years at Sikasso Hospital

Hachimi Amadou Poma^{1*}, Djénéba Maiga¹, Chaka Keita², Magara Samaké³, Fatoumata Berthé¹, Salif Traoré¹, Abdoulaye Sanogo¹, Saidou Touré¹, Marie Ange Dembélé¹, Aboudou Dolo¹, Harouna Ouattara⁴, Abdoul Karim Doumbia⁵, Cheick Bougadari Traoré⁶, Boubacar Togo⁵

¹Sikasso Hospital, Mali

²Reference Health Center of Commune II of Bamako, Mali

³Fousseyni Dao Hospital in Kayes, Mali

⁴Sominè Dolo Hospital in Mopti, Mali

⁵Gabriel Touré University Hospital of Bamako, Mali

⁶CHU Point G of Bamako, Mali

DOI: [10.36347/sasim.2023.v09i06.028](https://doi.org/10.36347/sasim.2023.v09i06.028)

Received: 24.05.2023 | Accepted: 20.06.2023 | Published: 23.06.2023

*Corresponding author: Hachimi Amadou Poma

Head of Pediatrics at Sikasso Hospital, Mali

Abstract

Original Research Article

Introduction: Nephroblastoma or Wilms tumor is the most common renal tumor in children (90%) and accounts for 5-10% of pediatric cancers. The WHO estimates the annual number of new cases of childhood cancer at 160,828. In Mali, nephroblastoma is the 3rd most common malignant disease in children after lymphoma and retinoblastoma. The main objective of this work is to study the frequency of renal tumors in children aged 0 to 5 years in the hospital of Sikasso. **Method:** This will be a retrospective, descriptive and analytical study of all cases of nephroblastoma diagnosed over a 5-year period from 2017 to 2021 at Sikasso Hospital. **Result:** The most represented age range was 3 - 7 years. Male gender was the majority in 62.50% of cases, with a sex ratio of 1.7. All patients had an abdominal mass, a lumbar contact. Patients with a duration of symptom evolution between 1 and 2 months were in the majority in 50% of cases. The tumor was unilateral in 87.50% of cases. Lung abnormalities were present in only 12.50% of cases. Hematuria was found in 37.50% of cases. Left kidney tumor was the majority in 75.00% of cases. **Conclusion:** Nephroblastoma remains the most frequent renal tumor in children, however, the delay in diagnosis remains a major challenge.

Keywords: Nephroblastoma, Wilms' tumor.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Nephroblastoma OrWilms tumor is the most common renal tumor in children (90%) and represents 5 to 10% of pediatric cancers. It can be uni or bilateral; with a predilection age of 1 to 5 years and a peak frequency between the 2nd and 3rd year of life [1].

In Sikasso, there are no data on nephroblastomas, hence the interest of this study, which aimed to determine the frequency and to describe the clinical and paraclinical aspects and to identify the difficulties in the management of nephroblastomas at Sikasso hospital.

MATERIALS AND METHOD

This was a retrospective, descriptive and analytical study of all cases of nephroblastoma

diagnosed over a 5-year period from 2013 to 2018 at Sikasso Hospital. Are included in our study, the registers and files of patients aged 0 to 15 years with a clinical and paraclinical diagnosis of nephroblastoma whatever the stage in the pediatric department at Sikasso hospital. Any patient over the age of 15 whose medical file was not correctly completed was excluded from the study.

Registries and records of patients with nephroblastoma were the source of data collection.

Data were entered into Excel 2013 and analyzed using Epi Info version 3.5.4 software. Mixed and bivaried unified analyzes were performed.

The survey sheet does not include the patient's surname or first name. This is in order to respect the

confidentiality and protection of the patient's personal data.

RESULTS

From January 1, 2013 to December 31, 2018, 79 cases of childhood malignant solid tumors were diagnosed in the pediatric department at Sikasso

Hospital, including 8 cases of nephroblastoma; ie a hospital frequency of 10.1% of all solid tumours. Boys represented 5 cases (63%) of our sample.

The most represented age group was 2-5 years in 37.50% of cases (see table 1).

Table 1: Distribution of children by age group

age range	not	%
0 – 1 year	2	25.00
2-5 years	3	37.50
5– 7 years old	2	25.00
Sup at 7 years old	1	12.50
Total	8	100.00

Abdominal mass associated with fever were the reason for consultation in all children. General condition was impaired in 6 (75%) children according to the lansky/karnofsky score.

On physical examination, all patients presented with abdominal distension, abdominal mass, lumbar

contact associated with abdominal tenderness. Collateral venous circulation (CVC) was present in 75% of cases. Patients presenting with symptoms lasting between 1 and 2 months were the majority in 50% of cases (see Table 2). The tumor was unilateral in 7 children (87.5%). Gross hematuria and pulmonary metastasis were found respectively in 3 and 1 children.

Table 2: Breakdown by consultation time

Duration of evolution of symptoms	not	%
8-21 days	3	37.50
1-2 months	4	50.00
More than 2 months	1	12.50
Total	8	100.00

The tumor was located at the upper pole of the kidney the tumor in 62.50% (5 cases), (Cf. table 3). It was left 6 cases (75%), right 1 case (12.5%) and

bilateral 1 case (12.5%). The complete blood count (NFS) was abnormal in all our patients. CRP was positive in 37.50% (3 cases).

Table 3: Distribution of patients according to renal location

Pole	not	%
Lower	2	25.00
Mid-renal	1	12.50
Superior	5	62.50
Total	8	100.00

In our study 62.50% of patients were referred, 25% signed a discharge. One case of death was recorded, i.e. 12.5%.

DISCUSSION

We collected 8 cases of nephroblastoma during 5 years, that is to say a hospital incidence of 1.6 cases per year. Dackono TA collected 15 cases of nephroblastoma over one year at the Gabriel Touré hospital in Mali [2]. 56 cases of nephroblastomas were collected over 11 years in Abidjan [3]. Chaachoué H. collected 34 cases of nephroblastomas during 3 years and 3 months in Morocco.

The number of new cases per year in Europe, Australia and North America is estimated at around 7 cases/million children, aged 0 to 15 years.

The most represented age group in our study was 2 -5 years old. This result is consistent with data from the literature. Dackono TA and Cissé confirmed the literature data. They found in their respective study 2-5 years as the most represented age group [8].

A series of studies also carried out in Uganda, Vietnam, South Africa and Brazzaville showed that 2 – 5 years was the age group most affected.

Of the 8 files studied, there was on average 63% boys and 37% girls, i.e. a sex ratio of 1.7. A similar result is found in Morocco by Kababri EL, i.e. 61% in favor of boys [6]. Dackono TA at the Gabriel Touré hospital in Mali [8] found a male predominance of 53% and a sex ratio of 1.12. On the other hand, TOGO found a predominance in favor of girls, i.e.

63.2% at the Gabriel Touré hospital in Mali [3]. Valayer *et al.*, [8] found that the distribution between the sexes was even in the statistics.

In our study, peasant children were the most represented in 75% of cases. Cissé had found a predominance of 40% in favor of peasant children.

Coulibaly [8] also found in his study 53% of peasant children.

The high frequency of peasant children in our study can be explained by the fact that our study was conducted in an agricultural region par excellence. This could surely be a handicap in carrying out additional examinations.

In our study, 75% of our patients lived in rural areas. Coulibaly A and Cissé had found in their study respective predominances of 52% and 64% of patients coming from rural areas [8, 10].

On the other hand Kababri EL and Dackono TA had found in their study a respective urban residence of 56% 73.3% [2, 6].

This rural predominance could be explained by the fact that in Sikasso, the population lives mainly in rural areas.

This would probably explain the delay in initial diagnosis and treatment.

Abdominal mass (100%) was the most common reason for consultation, in line with many authors [8].

Chaachoué H. and Cissé also found in their study an abdominal mass of 90% and 92% cases [3, 10].

To the main signs that our study reported (abdominal mass, lumbar contact, abdominal tenderness) according to the literature [6], we also noted associated signs such as hematuria (37.50%), deterioration in general condition (75%). No associated abnormality was found in our study.

In our study, the tumor involved the left kidney in 75% of cases. It involved both kidneys (bilateral) in 12.5% of cases. This result is superimposable to that of Dackono TA who found in his study that the left kidney is the most affected in 60% of cases [8].

Both disc some studies conducted in Abidjan by Yao *et al.*, and in Yaoundé by Sow *et al.*, showed that there is a predominance of straight localizations, respectively 53% 52% [13].

None of the patients had presented a hepatic metastasis. Only that 12.50% of patients had pulmonary metastasis.

Unlike Cisse who found 15% liver metastasis and 77% lung metastasis [10].

The radiological examinations performed were abdominal ultrasound (100%), chest X-ray (75%). CT scan (12.5%). His results can be superimposed on those of Dackono who found the abdominal ultrasound to be 100%, the chest X-ray to be 100%. While the computed tomography of our study differs from that of the same author who had found 93.3% of cases [2].

This very limited CT scan performed during our study could be explained by the low socio-economic level of the parents of our patients, as well as the only scanner in the hospital that was out of order at a certain time during the study. Complete blood count (NFS) was systematic in all our patients. CRP was positive in 37.50% of cases.

The blood ionogram was normal in 62.50% of cases.

NFS and HIV serology were systematic in the study of Dackono [8].

Several authors did not perform CRP or blood ionogram [2, 8].

In our study 62.50% of patients were referred, 25% signed a discharge. One case of death was recorded, i.e. 12.5%.

This high referral rate reflects the absence of a pediatric oncology unit at the Sikasso hospital.

CONCLUSION

Nephroblastoma is the most common malignant renal tumor in children. It mainly affects young children between 2 and 5 years old, affecting more boys than girls. The abdominal mass was the most dominant symptom in addition to an alteration in general condition and hematuria. Abdominal ultrasound was the first examination requested to suspect nephroblastoma before histology. Management is multidisciplinary and combines chemotherapy, pathological surgery with or without radiotherapy.

Conflict of Interest: None.

REFERENCES

1. Hajar, C. (2014). Nephroblastoma: clinico-radiologic histological therapeutic and evolutionary aspects (about 34 cases). *Medicine thesis, Fez, 084*, 174.
2. Dackono, T. A. (2011). Study of the epidemiological-clinical and anatomopathological

- aspects of nephroblastoma in the pediatric department of the CHU-G Medical thesis, Bamako, 102 p.
3. Chaachoue, H. (2014). Nephroblastoma: clinico-radiological, histological, therapeutic and evolutionary aspects (about 34 cases). *Doctoral thesis in Med, Fes, 084*, 174.
 4. Pianezza, M. L., Rubin, S., Bass, J., Chou, S., Pike, J. G., & Leonard, M. P. (2004). Wilms' tumor at the Children's Hospital of Eastern Ontario: 1990-2001. *The Canadian Journal of Urology, 11*(1), 2151-2156.
 5. Agnes, C. Kidney cancer in children (nephroblastoma). Hereditary and non-hereditary forms; IGR; p: 19-22.
 6. Kababri El, M. (1999). Child hospital nephroblastoma treatment. *Doctoral thesis in Med, Rabat, 15*, 1-35.
 7. Togo, B., Traore, F., Togo, A. P., Togo, P., Diakite, A. A., Traore, B., ... & Sidibe, T. (2014). Epidemiology and prognosis of childhood cancers at Gabriel-Toure Teaching Hospital (Bamako, Mali). *Médecine et Santé Tropicales, 24*(1), 68-72.
 8. Coulibaly, A. (1992). Abdominal mass at the Gabriel Touré hospital and at the point G hospital. *Doctorate thesis in Med, Bamako, 37*, 122.
 9. Bergeron, C. Childhood cancer. Pediatric appendix [internet] 2000 [accessed July 12, 2007]: 12p. Available at: <http://Med.Univ-Rennes1.Fr/etud/Pediatric/cancer>
 10. Cissé, B. (2008). Study of the epidemiological aspects of nephroblastoma in the pediatric department of the CHU Gabriel Touré. *Doctoral thesis in Med, Bamako, 56*.
 11. Schleiermacher, G., Doz, F., & Brisse, H. (2006). Abdominal tumor in children. *Med Competition, 128*(3), 121.
 12. Neuzillet, Y., & Coulanqe, C. (2007). Kidney tumors. *Rev. Prat, 57*(2), 195-00.
 13. Sow, M., Mbakop, A., Obama, M. T., Tedjoua, E., & Abondo, A. (1994). Kidney tumors in African settings. Incidence and anatomo-clinical aspects: Apropos of 123 cases observed at the central hospital and at the University Hospital of Yaoundé (Cameroon). *Prog Urol, 4*, 214-18.12.