

Spina bifida in the pediatric surgery Department of Fez

Z. BENMASSAOUD, F.B. BALDE^{1,2,*}, O. ALAOUI, A. MAHMOUDI^{1,2}, K. KHATTAL^{1,2} and Y. BOUABDALLAH^{1,2}

¹ *Departement of pediatric surgery, visceral and urology, Hassan II University Hospital of Fez, Morocco.*

² *Faculty of medecine, pharmacy and dental médecine, Sidi Mohamed BenAbdellah University of Fes, Morocco.*

World Journal of Advanced Research and Reviews, 2023, 18(01), 1090–1092

Publication history: Received on 11 March 2023; revised on 21 April 2023; accepted on 24 April 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.18.1.0711>

Abstract

Introduction: Spina bifida is one of the most common neural tube defects due to its serious repercussions: neurologic, urologic, orthopaedic and others to varying degrees requiring multidisciplinary management.

Patients and methods: This is a retrospective descriptive study of 202 patients managed in the pediatric surgery department of the Hassan II University Hospital of Fez, during an 8-year period from January 2014 to January 2021.

Results: The annual incidence of spina bifida was 40 cases/year with a male predominance. The main site of the malformation is at the lumbar and lumbodorsal level in 68%. The clinical examination was abnormal in almost 64%. Hydrocephalus was found in 83%. Transfontanellar ultrasound and CT scan were performed in all our patients, MRI in 85%. All the patients had a surgical cure of the spina bifida, the patients with hydrocephalus had a ventriculo-peritoneal shunt. The short term outcome was good in 79%.

Conclusion: Spina bifida is a serious pathology, it can frequently lead to functional and vital prognosis without forgetting the psychological one. The prognosis is mainly generated by the delay of management and the presence of associated complications.

Keywords: Spina bifida; Surgery; Complication; Department

1. Introduction

Spina bifida is an abnormal closure of the neural tube during the fourth week of development. [1]. It happens at any site of the vertebral column, but the most common site of the protrusion is the lumbosacral area. [2]. Spina bifida is one of the most severe neural tube defects. The incidence is around 1 per 2000 live births in France, 6 per 1000 live births in the Anglo-Saxon areas [3] and 1.3 per 1,000 live births in Africa [2]. It requires multidisciplinary management due to its serious repercussions: neurological, urological, orthopaedic and others to varying degrees.

In this present study, we aimed to describe the epidemiologic aspect of spina bifida in our department and, share our experiences in the management of this affection.

2. Material and methods

This is a retrospective descriptive over 8-years (January 2014 to January 2021). We included all the children admitted and managed for spina bifida during our period of study. We recorded and analyzed clinical aspects, imaging findings and complications. These parameters were evaluated in the short, mid and long terms.

* Corresponding author: F.B. BALDE

We strictly respect the ethics aspects. All the authors have contributed to the work.

3. Results

The annual incidence of spina bifida was 40 cases/year. The sex ratio was 1.14 with a male predominance. Consanguinity among parents is 20%. There was no folic acid intake in all the women. 70% of children were admitted at the first days after birth. Almost 50% of our patients were first or second born of the family. 148 out of the 202 (73%) have had a monitored pregnancy. But only 21 women (10%) have had a prenatal diagnosis. The main site of the malformation is at the lumbar and lumbodorsal level with a frequency of 68%. One patient had two simultaneous spina bifida. The clinical examination was abnormal in almost 64%. Such as bilateral club foot, hydrocephalus was found in 83% of patients.

Transfontanellar ultrasound and CT scan were performed in all our patients, MRI in 85 patients. 188 patients (93%) underwent uneventful surgical cure of their spina bifida and, 166 patients had a ventriculo-peritoneal shunt for their hydrocephalus a week after the cure of spina bifida.

159 patients had good recovery, 13 had infection of the operative sites, meningitis in 4 cases, necroses in 2 cases and, only one patient got fatal outcome dues to neurologic instability.

In the long terme, complications was urinary tract infections, constipation due to the spina bifida. The others are due to the entriculo-peritoneal shunt.



Figure 1 Patient of our study with two localisation of the spina bifida, dorsal and lombal.

4. Discussion

The mean prevalence of spina bifida in Africa is 0.13%. [2]. This prevalence varies from country to other: 0.43% in Algeria, 0.32% in Ethiopia, 0.26% in Tanzania, 0.12% in Cameroun, 0.10% in Egypt, and 0.10% in South Africa. The lowest burden of spina bifida was detected in Libya (0.006%) and Tunisia (0.009%) [3,4]. The incidence of spina bifida was 40 cases per year in our department. Prenatal diagnosis and terminations of pregnancies, not primary prevention, helped spina bifida become an uncommon condition. Spina bifida can be diagnosed prenatally by imaging techniques such as ultrasound and by identification of alpha-fetoprotein levels in the amniotic fluid or serum. Any malformation or abnormality in the vertebral arches is starting to be visualized by twelve weeks of gestation [5].

Even if the pregnancy is well monitored in the literature, prenatal diagnosis was made in only 10 % in our study and 18% in that of El Alaoui D. [4] and, none in others series [6,7] Neurologic examination was abnormal in over 50% in most of the reported series [8, 9] Hydrocephalus is usually reported in 50% to 90% [10,11].

Recent evidence proves that folic acid reduced the incidence of spina bifida by as much as fifty to seventy percent if four hundred micrograms are taken daily beginning a month prior to the conception and continuing through an early gestation. [11,12]. A daily intake of folic acid two months prior to conception and two months after conception can prevent approximately 70% of spina bifida [12].

Surgery is performed in almost all the patients. Complications are the same reported in the literature. Death is reported in 1% in our série and over 10% in other series [6, 10]

5. Conclusion

Spina bifida is a serious pathology, it can frequently lead to functional and vital prognosis without forgetting the psychological one. The prognosis is mainly generated by the delay of management and the presence of associated complications.

Compliance with ethical standards

Acknowledgments

Our Acknowledgments went to the the staff of the the pediatric surgery department and the radiologic department for the collaboration.

Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] A. Gedefaw, S. Teklu, and B. T. Tilahun, Magnitude of neural tube defects and associated risk factors at three teaching hospitals in Addis Ababa, Ethiopia, *BioMed Research International*, vol. 2018, Article ID 4829023, 10 pages, 2018.
- [2] Mohammed Oumer, Molla Taye, Hailu Aragie and Ashenafi Tazebew. Prevalence of Spina Bifida among Newborns in Africa: A Systematic Review and Meta-Analysis. *Hindawi Scientifica* Volume 2020, Article ID 4273510, 12 pages <https://doi.org/10.1155/2020/4273510>.
- [3] E. Jauffret. Spina bifida. *Physiotherapy-Physical Medicine-Rehabilitation*; 26-472-B-10.
- [4] EL Alaoui, Driss. Surgical management of spina bifida, about 11 cases in surgery department A of the children's hospital in Rabat over a period of 5 years from 2013 to 2017.
- [5] T. W. Sadler, *Langman's Medical Embryology: Chapter: Clinical Correlates in Central Nervous System Embryology*, Wolters Kluwer, Alphen aan den Rijn, Netherlands, 11th edition, 1963.
- [6] Abu Traore. Epidemiological, clinical and therapeutic aspects of spina bifida in the pediatric surgery department of the CHU Gabriel Toure-2008.
- [7] Sulla MS. Study of spina bifida in the pediatric surgery department of the CHU Gabriel Toure. *Medicine Bamako* 2008.
- [8] Sawadogo I. Spina bifida epidemiological, clinical, therapeutic and prognostic aspects in the neurosurgery department of CHU-YO; about 81 cases.
- [9] Ait Sayad Hanane. Management of spina bifida in the neurosurgery department at CHU Mohhamed IV (about 72 cases) - Cadi Ayad University - Faculty of Medicine and Pharmacy Marrakech, year 2010.
- [10] Azennoud. Global management of spina bifida at the children's hospital in Rabat (about 13 cases), year 2010.
- [11] Ouattara. Myelomeningoceles in Africa: going from Ivory Coast to the pediatric surgery department at the University Hospital of Youpougon and Cocody.
- [12] D. Estifanos, E. T. Adgoy, D. Sereke, B. Zekarias, S. Marzolf, and K. Tedla. The prevalence, trend, and associated demographic factors of neural tube defects at orotta national. referral maternity hospital, asmara: retrospective record review study, *Science Journal of Public Health*, vol. 5, no. 6, p. 452, 2017.