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Original Article

Complications of the traditional treatment of closed trauma of the limbs in children

Guindo OY,[1*] Coulibaly Y,[1] Amadou I,[1] Arrat FM,[1] Coulibaly MB,[2] Coulibaly O,[1] Kouyaté M,[3] Kamaté B,[1] Djiré MK,[1] Doumbia A,[4] Koné O,[5]

1. Department of Pediatric Surgery of the CHU Gabriel Touré, Bamako, Mali
2. Department of Pediatric Surgery of the Reference Center of Sikasso, Mali
3. Department of Pediatric Surgery of Alphousseyni N'Dao Hospital in Kayes, Mali
4. National Institute of Public Health, Bamako, Mali
5. Academic Hospital of Gabriel Touré, Bamako, Mali

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ABSTRACT

Background: This study aims to describe the complications arising from traditional medicine following blunt trauma to the limbs in the Pediatric Surgery Department of the Academic Hospital Gabriel Touré (Mali).

Methods: This prospective and descriptive study spanned 25 months, conducted from January 1, 2020, through February 28, 2022. It included all children aged 0-15 years treated for complications of traditional blunt limb trauma in the service.

Results: During the study period, 82 complicated cases resulting from the traditional treatment of blunt limb trauma were recorded. The average patient age was 7.01 years (4 months - 15 years) with a sex ratio of 2.03. Parents of patients were uneducated in 43.9% of cases. Domestic accidents caused 69.5% of trauma cases, with the forearm being the most affected segment in 28.0% of cases. Parents' beliefs motivated the choice of traditional treatment in 54.9% of patients. Localized massaging of traumatized limbs was performed on 97.6% of patients, and 15.0% were treated by their parents. The average time for hospital visits was 111 days (3 days to 2 years). The most common complications were osteitis (25.6%), subcutaneous abscess (23.2%), and skin necrosis (13.4%). Management primarily involved abscess drainage. Morbidity was 28%, with a mortality of 6.1%. Long-term complications included limb deformity.

Conclusion: Despite the legalization of traditional medicine, implementing strategies for information, awareness, and education of the population through media and places of worship should minimize complications resulting from the traditional treatment of blunt limb trauma.

Keywords: Complications, Traditional treatment, Blunt limb trauma, Child, Mali

INTRODUCTION

According to the WHO, traditional medicine encompasses all knowledge, skills, and practices based on the theories, beliefs, and experiences of different cultures. [1] It has been used for thousands of years and is prevalent in developing countries, where practitioners often rely on it for their livelihoods. Bone setters employ various therapeutic methods, including massages, powder application, tight bandages, or immobilization by chopsticks. [2,3] However, serious complications can arise due to a lack of anatomical knowledge, brutal therapeutic techniques, and unsanitary practices. Previous studies have highlighted such complications in different regions [4,5]. This study aimed to evaluate complications resulting from traditional treatments following limb traumas in the Pediatric Surgery Department of Gabriel Touré Hospital in Mali.

METHODS

With IRB approval, from January 1, 2020, to February 28, 2022, we conducted a prospective descriptive study

Correspondence*: Dr Guindo Oumar. Department of pediatric surgery of the academic hospital Gabriel Touré, Bamako
Email: oumaryguindo@gmail.com

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involving all children aged 0 to 15 years who were admitted to the pediatric surgery department at Academic Hospital Gabriel Touré due to complications following traditional treatment following blunt trauma to the upper or lower limbs.

This study excluded patients with complications resulting from traditional treatments in the absence of prior trauma and cases involving open limb fractures.

Patients undergoing traditional treatment were admitted to the pediatric surgery department either due to unbearable pain, changes in the skin's appearance, cutaneous fistula, or limb deformation. Paraclinical assessments were conducted based on individual cases, including Groupage-Rhesus (GR/RH), Blood Count (CBC), prothrombin level (PT), kaolin cephalin time (TCK), C-reactive protein (CRP), hemoglobin electrophoresis, cytobacteriological examination of pus (ECBP), Doppler ultrasound, and standard limb x-rays.

Data were recorded using Word software, and statistical analysis was performed using IBM SPSS version 25 software. The chi-square statistical test was utilized to discuss the results, with a risk threshold set at $\alpha = 5\%$.

RESULTS

During the study period, we documented 82 cases of complications resulting from the traditional treatment of limb blunt trauma, constituting 5.43% of surgical interventions. The average age of the patients was 7.01 ± 4.141 years, ranging from 4 months to 15 years, with the most prevalent age group being older children (7 to 15 years), accounting for 38 cases (46.3%). The sex ratio was 2.03, and in 43.9% of cases, the parents of our patients had no formal education.

The trauma resulted from domestic accidents in 57 cases (69.5%), sports accidents in 13 cases (15.9%), road traffic accidents in 7 cases (8.5%), and workplace accidents in 5 cases (6.1%). The primary reason for opting for traditional treatment in our study was parental belief, identified in 45 cases (54.9%), followed by advice from friends or family in 30 cases (36.6%), poverty in 5 cases (6.1%), and distrust of modern medicine in 2 cases (2.4%).

The upper limb was the site of trauma in 44 cases (54%), the lower limb in 28 cases (34%), and the involvement was multifocal in 10 cases (12.2%). The forearm alone accounted for 28% of the limb segments.

Among the types of traditional treatments in our context, massage has been the most commonly practiced either alone or in combination with other methods. The options used, listed in order of frequency, include massage in 80 patients (97.6%), traditional splints in 53 cases (64.6%), incantations in 26 cases (31.7%), and black powders in 5 cases (6.1%). Following this traditional treatment, patients sought consultation in pediatric surgery after an average of 111 days, ranging from 3 days to 2 years.

Medical consultations were sought within less than 7 days in 30.5% of cases and more than two (2) years in 25.6% of cases. This highlights the diverse range of traditional treatments utilized and the varied timelines for seeking medical intervention after undergoing such treatments.

Pain, noted in 30 patients (36.3%) was the first reason for consultation in the pediatric surgery department followed by loss of function seen in 13 cases (15.9%), skin necrosis (Fig. 1) in 10 cases (12.2%), gangrene (Fig. 2) in 9 cases (11%), fistulation in 7 cases (8.5%), edema in 6 cases (7.3%), limb deformity in 4 cases (4.9%) and joint stiffness in 3 cases (3.6%).

Figure 1: An 8-year-old boy showing cutaneous necrosis

Figure 2: A 13-year-old girl suffering from forearm gangrene after treatment of 1/3 middle ulna fracture by bone setters.

On X-rays of the affected limb segment, a fracture was found in 33 cases (40.2%). The different types of complications are listed in Table I.

The surgical management of these complications encompassed abscess drainage in 19 patients (23.2%), sequestrectomy + trepanation + curettage in 13 cases (15.8%), necrosectomy in 11 cases (13.4%), amputation in 10 cases (12.2%), aponeurotomy in 9 cases (11%), and osteotomy + osteosynthesis in 4 cases (4.9%). This surgical approach was complemented with orthopedic treatment and physiotherapy sessions.

Table I: Distribution of patients by type of complication

Outcomes	**N**	**%**
Osteitis	21	25.6
Subcutaneous abscesses	19	23.2
Skin necrosis	11	13.4
Gangrene	10	12.2
Lodge syndrome	9	11
Syndrome de Volkmann	5	6.1
Vicious Cal	4	4.9
Joint stiffness	3	3.7
Total	**82**	**100**

Following this comprehensive treatment, the morbidity rate was 28%, with a mortality rate of 6.1%. Additionally, 4 patients were discharged against medical advice (4.9%), experiencing disabling multi-segmental osteitis affecting the hip and lower limbs. The sequelae presented in 23 of our patients were motor disability in 15 patients (18.3%) and neurologic sequelae in 8 cases (9.7%).

DISSCUSION

Traditional medicine in ortho-traumatology maintains a significant role alongside modern medicine in our country. It remains closely intertwined with the socio-cultural fabric and deeply ingrained in societal habits. Approximately 80% or more of rural populations in developing countries rely on this form of medicine, notwithstanding the potential for notable sequelae. [6,7] During our study period, we identified 82 cases of complications following the traditional treatment of limb trauma, constituting a hospital frequency of 5.43%. This finding diverges from that of Mensah E [8] in Benin, who documented 65 cases over 66 months.

The primary rationale behind embracing traditional treatment during our study was a steadfast belief in the healing efficacy of traditional medicine. This preference emanated from the societal attachment to tradition and was notably associated with a lack of education. Interestingly, our study did not find a significant influence of parental education levels on this choice (p=0.29).

Contrary to our findings, the influence of the immediate social circle emerged as the primary factor guiding the choice of traditional treatment in the studies conducted by Adendjingue DM [9] and Alam W. [10] Additionally, poverty was cited as a determining factor in 53.92% of cases favoring the adoption of traditional treatment in the research conducted by Ngaroua D [4] in Cameroon. These variations in influencing factors underscore the complex interplay of cultural, social, and economic considerations in the choice of medical treatments.

Bone setters use several therapeutic methods to achieve treatment such as reduction, massages, restraints, incantations, and traditional powders.

Intense massages during the preliminary stage are often a source of significant pain and can lead to mobilization of the fracture, causing consolidation anomalies. Overly tight restraints that block blood circulation, creating a tourniquet effect, may result in ischemia, potentially leading to amputation. Immobilizations without adherence to the fundamental principles of joint immobilization adjacent to the fracture can promote the development of vicious calluses or pseudarthrosis.

In our study, massage therapy, either alone or combined with other techniques, was applied in 97.6% of our patients. This prevalence could be attributed to the transmission of this practice across generations and the lack of awareness among bone setters regarding the adverse effects on a child's health.

Contrary to our findings, Adami et al [11] identified splint bandages as the most widely used traditional method. Following the onset of complications, approximately 40.2% of patients sought consultation in our department after 15 days, a delay influenced by the parent's education level in our study (p=0.004).

The most common complication resulting from parents' use of traditional medication in our study was osteitis. This differs from the findings of Mensah E [8] and Souna B.S [12], who identified vicious calluses and pseudarthrosis, respectively, as the most frequent complications. This discrepancy could be attributed to the robust capacity for bone consolidation and remodeling in the pediatric population in our study.

Other authors, such as Lamah L [13] and Odatuwa-Omagbemi DO [14], have reported pseudarthrosis as the most frequently encountered complication. However, in our study, the occurrence of complications was not significantly associated with the traditional method of treatment (p>0.05).

The management of these complications was surgical in 66% of the cases in our series, with abscess drainage being the most commonly used method. Post-treatment outcomes depended on the type of lesion, etiology, and the patient's general condition. In our series, the mortality rate was 6.1%, slightly higher than the 3.4% reported by Adami AM et al [11]. Tekpa BJ [15], in a series of 21 cases of gangrene, reported a zero mortality rate.

CONCLUSION

Complications frequently arise following traditional treatment for limb trauma in our country. Despite the official recognition of this form of medicine, we advocate for the implementation of a strategy focused on information dissemination, raising awareness, and educating the population through media channels and religious platforms. This approach should specifically address the potential complications associated with traditional treatment for limb trauma, targeting both the individuals undergoing treatment and their relatives, with the ultimate goal of minimizing these complications.

Conflict of Interest: Nil

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