



Original Article

Clinical Presentation and Management of Abdominal Stab Wounds at the Regional Hospital of Ngaoundéré (Cameroon)

Présentation clinique et prise en charge chirurgicale des plaies par arme blanche à l'Hôpital Régional de Ngaoundéré (Cameroun)

Ngaroua^{*1&2}, Mbo A. Jérémie², Djibrilla Yaouba², Fotio Fokeng Herve², Eloundou N. Joseph³

ABSTRACT

Introduction. The abdominal wound stabs are wounds located between the diaphragm and the pelvic cavity whatever the opening of entry. The purpose of this study is to highlight the diagnostic and therapeutic problems in order to improve and ensure their effective care. **Methods.** We carried out a retrospective descriptive study of 10 years (2005-2014) which compiled 306 cases of abdominal stab wounds registered in the Regional Hospital of Ngaoundéré. **Results.** Most of the patients were male with a rate of 86% and mostly aged between (20-29 years) with a percentage of 45.7%. 48 out of 306 registered cases were penetrating wounds stab either 15.7% and were systematically operated. Generally, the weapon used was knife with a frequency of 194 for a rate of 63.4%. Occurrence of circumstances was dominated by holdup (55.9%). Intra-abdominal lesion was clinically evident at the existence of hemorrhagic shock, hem peritoneum and evisceration. In a precarious situation like that of the regional hospital of Ngaoundéré, where there is a considerable lack of human and material resources, systematically all penetrating abdominal wound stab must proceed to a laparotomy procedure even though a rate of 12.5% of null laparotomy was recorded. **Conclusion.** The high mortality rate of 20.8% could have been improved by a better post-operative monitoring.

RÉSUMÉ

Introduction. Les plaies abdominales par arme blanche sont des plaies intéressant la région comprise entre le diaphragme et la cavité pelvienne quel que soit l'orifice d'entrée. L'objectif de cette étude était de ressortir les problèmes diagnostiques et thérapeutiques en vue d'améliorer leur prise en charge dans les formations sanitaires disposant d'un plateau technique insuffisant. **Méthodologie.** Il s'agit d'une étude rétrospective et descriptive sur une période de 10 ans où nous avons colligé 306 plaies abdominales par arme blanche à l'Hôpital Régional de Ngaoundéré. **Résultats.** La plupart des blessés était de sexe masculin 263 soit un pourcentage de 86% et âgés pour la majorité de [20-29], 48 étaient pénétrantes (15,7%) et ont été systématiquement opérés. (15,7%) ont été systématiquement exploré chirurgicalement. L'arme blanche la plus utilisée a été le couteau avec un effectif de 194 soit un pourcentage de 63,4%. Les circonstances de survenue ont été dominées par les agressions 171 cas soit un pourcentage de (55,9%). **Conclusion.** L'atteinte intra-abdominale a été cliniquement évidente devant l'existence d'un choc hémorragique, d'un hémopéritoine, et d'une éviscération. En situation précaire comme dans notre cas et compte tenu de l'insuffisance de ressources humaines et matérielles au sein de l'Hôpital Régional de Ngaoundéré, l'attitude est la laparotomie systématique devant toutes plaies pénétrantes de l'abdomen malgré un taux de 12,5% de laparotomie blanche. Le taux de mortalité est de 20,8% pourrait être amélioré par un meilleur suivi post opératoire.

¹ Regional Hospital of Ngaoundéré-Cameroun

² Department of Biomedical Sciences, University of Ngaoundéré-Cameroun.

³ Faculty of Medicine and Biomedical Sciences, University of Yaoundé 1

Corresponding author

Dr. Ngaroua, Tel: (237) 99 97 83 51; Email: mngaroua2007@yahoo.fr

Keywords: abdominal wounds, cold steel, stab wounds, penetrating, laparotomy.

Mots clés : Plaies abdominales, arme blanche, prise en charge, laparotomie.

INTRODUCTION

Lesions due to violence and accidents represent the second cause of mortality in the world. This mortality is in direct relation with the gravity of the trauma and late healthcare [1]. Stab wounds represent the most frequent cause of penetrating abdominal wounds whose gravity depends on whether superficial or deep it is, its localization and concerned organs [2]. Abdominal wounds are traumas on the abdomen with break of parietal continuity of the abdomen no matter the point of entry of the agent in cause. If lesions touches the peritoneal cavity, it is called penetrating wound; when it touches an organ it is known to be perforated [3]. These traumas represent a sample group

of various lesions that may sometimes be threatening for life within a short period of time for the patient especially when vital organs are touched [4]. These traumas have a care plan protocol known and adapted in developed countries with adequate technical skills and experience, on the other hand, in low income countries with almost inadequate skills and experience, care plans most at least be modulated in accordance to the available resources so as to answer the high need of care. The purpose of the study was describe the diagnostic and therapeutic problems of abdominal wounds so as to ameliorate their management in the regional hospital of Ngaoundéré. Specifically, we

aimed to address some epidemiological and clinical aspects of abdominal stab wounds and to describe the management and outcome of these patients

METHODOLOGY

Place and study framework

Regional Hospital of Ngaoundéré which is the hospital of reference of the Adamawa region

Health care protocol description in the hospital

The method of care plan in the hospital from diagnosis to patient exit is based on interview carried out with the surgeons. During this period of study, the regional hospital of Ngaoundéré had no scanner and echography at the bed head of patients. Health care protocol is as such:

- Reception of patients, identification, disease history, vital parameters.
- Diagnosis: objectively define the deepness of the abdominal stab, presence or absence of peritoneal liquid and exploration following the IPPA (inspection, palpation, percussion and auscultation) stages.
- When it happens that we have to deal with a superficial wound, we proceed directly to a surgical trimming.
- In case of any doubt about the lesion materialized by an evisceration, peritoneal liquid flow, we proceed directly to a surgical intervention without any delay.

At the end of surgery, the patient regains his bed in hospitalization where he/she receives close monitoring of vital parameters and cares.

Study design and duration

The design was mainly a retrospective descriptive study going from January 1st 2005 to December 31st 2014 or either 10 years.

Target population

All hurts with an abdominal wound stab in the Adamawa region admitted to the regional hospital of Ngaoundéré during the period of study.

Inclusion and exclusion criterions

Were included all hurts patients alive with abdominal wound stab admitted to the hospital

Were not included to the study patients with ballistic trauma and those taken in charge from other hospitals.

Sampling

We used the non-probabilistic method of sampling.

Data collection

Data were collected from: the patient records of consultation, records of surgical procedures, records of hospitalization and deceased records.

Variables

The following data: age, sex, profession, circumstances of arrival, causal agent, assessment of lesions. Data were collected by direct counting of all abdominal wounds stabs from different records. Counting was based on patients name so that the same patient is not enrolled several times.

Data analysis was made possible by the aid of Microsoft Office Excel 2013 and software R 2.13.0 for graphs and tables.

RESULTS

We identified 306 cases of abdominal wound stab alive at admission among which 263 were men and 43 women with a sex ratio of 6.1 in favor of men. By rating our sample by different age intervals, we notice that the age interval of [20-29] years are the most represented with a percentage of 45.7%. The least represented interval age was that of [40-49] years with a percentage of 4.2%. The youngest victim had 2 years and the oldest 87 years. The average age was 26.5 years.

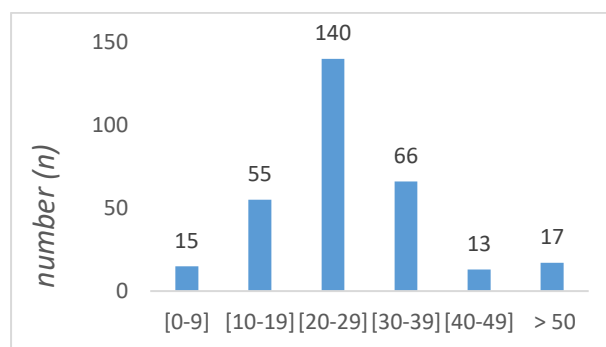


Figure 2: Distribution of patients by age

The investigation of the etiology of wounds reveals that assaults is the most represented circumstance of arrival of wound stabs with a total number of 171 cases (55.9%). Suicide is the least represented with just 1 case (0.3%) within 10 years.

Table 1: Circumstances of stab wound

Circumstances	Number	%
Assault	171	55,9
Public Highway Accident	26	8,5
Fight	25	8,1
Accidents	14	4,6
Goring	3	1
Non Determined	66	21,6
Suicide	1	0,3
Total	306	100

The most used artisanal weapon was knife with a record of 194 (63.4%) times. On the other hand, arrow was the least recorded with just 1 case (0.4%) as shown below.

Table 2: Distribution according to the nature of the weapon

Nature of weapon	Number	%
Highway accident	31	10,1
Glass Bottle	4	1,3
Cow horn	4	1,3
Knife	194	63,4
Arrow	1	0,4
Razor blade	3	1
Machete	4	1,3
Non Determined	65	21,2
Total	306	100

The next table gives us the frequencies of exposition of different socio-professional to abdominal wound stab. We found out that, moto taxi-men were more exposed to abdominal wound stabs with a record of 57 (18.7%) whereas teachers were less exposed with a number of 5 (1.6%).

Table 3: Distribution of patients according to profession

Profession	Number	%
Learners	47	15,4
Security agents	9	2,9
Others	43	14
Shepherds	17	5,5
Shopkeepers	24	7,9
Farmers	12	4
Teachers	5	1,6
Housewives	26	8,5
Moto taxi-men	57	18,7
Non Determined	37	12
Without Profession	29	9,5
Total	306	100

Learners: pupils, secondary and university students
Others: cartographers, bakers, carpenters, firemen, builders, dressmakers, nurses, photographer, soldiers, hair-dressers, hotel keepers and imams etc.

Among the 306 recorded cases, 48 had a clinical diagnoses of a penetrating abdominal wound stab and as such were operated at admission. Among them, 38 (9.2%) recovered after surgery and 10 (20.8) died. Seven (70%) post-operative deaths occurred within 72 hours of procedure.

DISCUSSION

According to this design study, men (86%) are more involved with abdominal wound stab with a sex ratio of 6.1. We had similar results to those of Oumar (2013) [5] and Sani and al. (2004) [6] who got a predominance of men with respectively 83.3% and 90%. This may probably be as a result of men activities in the region and especially the place that men occupies in African culture. For instance, moto taxi is only reserved for men in this region of the country.

The age group between 20 and 29 years are the most exposed group with an average age of 26.5 years. Similar results have been described by Doumbia (2008) [7] and Oumar (2013) where they obtained an average age of 26 years. This is so because youths constitute the active group age of all African societies and Cameroon in particular, hence the most exposed group age to all assaults.

Assault represent 55.8% and therefore takes the first position in our series, results confirmed by the study of Doumbia (2008) [7] who obtained 69.7%, Shangumanathan and al. (2004) [8] obtained 55.5% whereas Jackson and al. (2005) [9] obtained 80% assault. These rates may be justified as a result of growing aggressiveness in our societies due to several reasons among which are: juvenile delinquency, gang criminalities, unemployment, socio-economic factors such as idleness, less schooling, poverty, etc.

The study reveals that the most used weapon for assault was knife with 63%. This may be as a result of the fact that

knife makes part of daily life objet the population of the North carries with them for several reasons and since no law condemns the transport of this objet the handling and use is quit trivial to all. Youssef (2005) [10] obtained similar results, that is 63%. The same mechanism have been obtained by many other authors like Bull (2003) [11]; Telmon and al. (1999) [12] who obtained respectively 66.6% and 75%. Moto taxi drivers are the most represented with a rate of 18.6% because of their activities late at night sometimes and in all the streets of the town be it dangerous or not. In opposition to our results, Almahadi (2009) [13] obtained a predominance of shepherds. In this design, null laparotomy gave 12.5% with a mortality rate of 20.8%. Sani and al. (2004) [6] obtained a mortality rate of 18%. While Lenriot (1999) [15] obtained a mortality rate varying between 10% and 30% in spite of the progress realized in the healthcare plan of wounded patients. Results obtained from this design study differs a little from those of Sani and al. probably because of the difference in technical skills, monitoring tools and adequate equipment's of investigation which we don't have in Ngaoundéré. On the other hand, our results confirms those of Lenriot because his design concerned low income countries with limited human and material resources. Hence, when necessary conditions of work and means of investigations are not available permanently and at time, laparotomy most be consider first before any further complication. Hence, it will be better to reduce the mortality rate rather than the cost of null laparotomy therefore systematic laparotomy for penetrating abdominal wound stab. Nevertheless, post-surgery mortality occurs within 6.7 days in average in hospitalization, not directly imputable to surgery but probably to follow up in service.

CONCLUSION

Abdominal traumas constitute a real problem of public health in the world and especially low income countries. We had to describe the care plan of abdominal wounds in the hospitals with limited human and material resources for diagnosis and treatment. The study revealed that young adults aged between 20 to 29 years are the main age touched with an average age of 26.5 years. Men are more concerned than women. Because of a poor technical skill and lack of monitoring tools in the hospital, we obtained a mortality rate of 20.8%.

It will be more convenient to proceed directly to a laparotomy systematically when there is a suspicion of a penetrating wound abdomen so as to raise the diagnosis of penetrating wound abdomen and/or to anticipate on surgical treatment as such prevent complications.

REFERENCES

- 1- RAHERINANTENAINA F., RAKOTOMENA S., RAJAONARIVONY T., RABETSIAHINY L., RAJAONANAHARY T., RAKOTOTIANA F., HUNALD F., RAKOTO R. Traumatismes fermés et pénétrants de l'abdomen: analyse rétrospective sur 175 cas et revue de la littérature. *Pan African Medical Journal*, 2015, vol. 20(129), 125-136.
- 2- BEGE T., BERDAH S., BRUNET C. Les plaies par arme blanche et leur prise en charge aux urgences. *La Presse Médicale*, 2013, vol. 17(21), 72-81.
- 3- DIENG M., WILSON E., KONATE I. NGOM G., NDIAYE A., NDOYE J., DIA A., TOURE C. Plaies pénétrantes de l'abdomen : "abstentionnisme sélectif" versus laparotomie systématique. *Académie Nationale de Chirurgie*, 2003, vol. 2(2), 22-25
- 4- GUIVARCH Elise. Stratégie de prise en charge des plaies thoraciques par arme blanche dans un déchoquage : Une série consécutive de 153 patients. *Mémoire de DES : anesthésie et réanimation*. Paris : Académie de paris, 2013, vol. 1.
- 5- OUMAR T. Les perforations digestives traumatiques dans le service de chirurgie générale du centre hospitalier universitaire Gabriel Toure. *Thèse de doctorat : médecine. Bamako : université de Bamako*, 2013.
- 6- SANI R., BISSEMB N., ILLO A., SOUNA B., BAOUA B., BAZIRA L. La plaie abdominale : Revue de 316 dossiers à l'Hôpital National de Niamey – Niger. *Médecine d'Afrique noire*, 2004, vol. 51(7), 399-402.
- 7- DOUMBIA Madani. Etude des éviscérations abdominales dans les services des urgences chirurgicales, de chirurgie générale et pédiatrique du C.H.U Gabriel Toure. *Thèse de doctorat : médecine. Bamako : université de Bamako*, 2008.
- 8- SHANMUGANATHAN K., IRVIS S., CHIU W., KILLEN K., HOGAN G., SCALEA T. Penetrating torso trauma: triple-contrast helical CT in peritoneal violation and organ injury a prospective study in 200 patients. *EPUB* 2004, vol. 231(3), 775-84.
- 9- JACHSON S., CALDWELLE, SCOTT, TALALUDIN B., SUGRUE M. abdominal trauma : a disease in evolution. *ANZ surgeon journal*, 2005, vol. 75, 790-794.
- 10- YOUSOUF A. Etude épidémiologique des lésions traumatiques par armes à feu dans la région de Gao. *Thèse de doctorat : médecine. Université de Bamako*, 2005.
- 11- Bull S. Traumatologie urbaine et organisation des soins d'urgence. *Médecine d'Afrique noire*, 2003, vol. 6(3), 231-234.
- 12- TELMON N. ROUGE ARBUS L. La main est-elle une arme ?. *J.M.L.D.M.*, 1999 ; T.37, vol.1, 29-32
- 13- ALMAHADI Mohamed. Prise en charge des plaies par armes blanches dans le service de chirurgie de l' 'hôpital régional de Gao. *Thèse de doctorat : médecine. Bamako : Université de Bamako*, 2009.
- 14- POTEL G., BOTTET A., BROEGG S. Prise en charge des plaies aux Urgences : 12^{ème} conférence de consensus, 2 décembre 2005, Clermont-Ferrand, *Société Francophone de Médecine d'Urgence*. Clermont-Ferrand : 2005.
- 15- LENRIOT Jean-Pierre. Plaies et traumatismes fermés de l'abdomen : Diagnostic, conduite à tenir en situation d'urgence. *La revue du praticien*, 1999, vol. 49, 333-338.