PRACTICAL EXERCISE 3

REFERENCES AND ILLUSTRATIONS

1. Manuscript on "Neonatal neuroblastoma":
   Comment on the following sections:
   (a) Figures
   (b) References

2. Manuscript on "Sharp waste disposal practice":
   (a) Comment on the figures

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NEONATAL NEUROBLASTOMA

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ABSTRACT

Neuroblastoma is the most common malignant neonatal tumor but its presentation varies enormously. It may present with mass abdomen, lymphadenopathy or simply with diarrhea. A high level of clinical suspicion is required to diagnose the case. We present a case of neonatal neuroblastoma who presented with skin lesions. Diagnosis was established by biopsy of a representative skin lesion.

Key words: Neonatal Neuroblastoma, malignancy, metastases.

INTRODUCTION

Neuroblastoma is the most common malignant neonatal tumor, making up about 50% of neonatal malignant tumors[1] with an estimated incidence of 0.61 per 100000 live births[2]. The presentation varies, it may be massive or minute, irregular and stony hard. Rarely, it can present with diarrhea, hypertension[3], an enlarging, firm, usually painless, mass of the neck with Honer's syndrome[4,5] or even with cutaneous metastases[6], and exophthalmos[7]. Treatment varies from spontaneous regression to surgery and chemotherapy. We present a case of neonatal neuroblostoma who presented with nodular skin lesions of variable ages, diagnosed by biopsy of the representative skin lesion.

A 25 days old male child presented with multiple swellings on the body. According to the mother, the disease started with a single nodular swelling on the chest a few days ago. Since then, new lesion were appearing every second to third day and the disease had spread to involve the head, trunk and both the upper and lower limbs. There were no constitutional symptoms. Examination revealed an alert well looking neonate with multiple nodules of the whole body, which were of variable sizes. The location of the lesions was also variable. Some lesions were intradermal, some subcutaneous while others were deeply located. They involved the head including the left upper eyelid; the trunk and both the upper and the lower limbs. However, the trunk was relatively thickly populated. Both the thighs were swollen, with the left more than the right. Scrotum and prepuce were also swollen (Fig. 1 & 2).

The rest of the systemic examination was unremarkable.

Full blood count, urinalysis, X-Ray chest and skeletal survey showed normal results. Ultrasonography was unremarkable. Biopsy from a representative skin lesion (nodule) was taken. Microscopic picture showed tumor composed of groups of loosely packed small sized round to oval cells having fibrilla processes and interspersed with few gaglion cells.

The groups of cells were separated by fibro vascular septa and storma with evidence of rosette formation-findings consistent with metastatic neuroblastoma.

Further search for primary was not fruitful and the patient was referred to the Institute of Radiotherapy and Nuclear Medicine (IRNUM) for further management, with a request for follow up visits to our out-patient department.

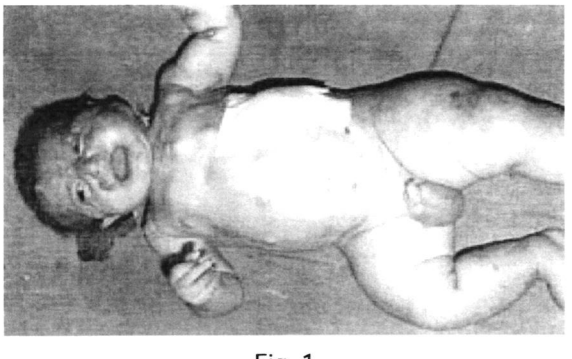

Fig. 1

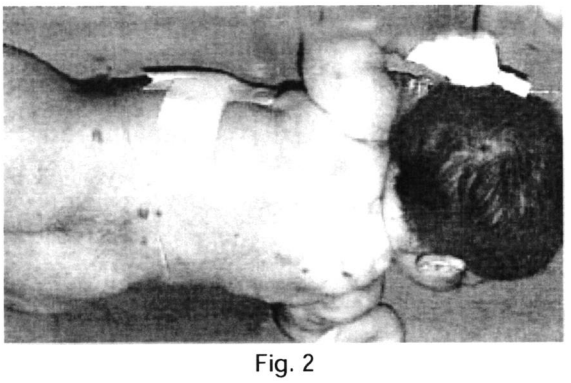

Fig. 2

The patient did not return to us for follow up and it was impossible for us to follow him at this village because he belonged to a far flung area of Mohmand Agency, a tribal area of N.W.F.P.

DISCUSSION

As a whole, neonatal malignancies are rare. They comprise 2% of all pediatric malignancies[2]. Neuroblastoma, the commonest neonatal malignancy, comprise of 50% of all neonatal tumors[1], the incidence being 0.61 per 100,000 live births[2]. The commonest presentation is with flank or abdominal mass, which is usually painless. However, the presentation may vary from simple diarrhea to as complex as "dancing eyes, dancing feet syndrome"[3,8]. Cautaneous metastases may be the only manifestation and hence of paramount importance[6] because the nature and the site of the likely neoplasm can be suggested by such surface clues[9]. Our patient presented with cutaneous metastases and we were unable to find out the primary due to the non-availability of computerized tomographic (CT) scanning and magnetic resonance imaging (MRI) facilities. The ultrasound scanning was not informative in this regard. The swelling of thighs, scrotum and prepuce suggests lymphatic obstruction due to compression effects.

Biopsy of the skin lesion rules out the commonest differential diagnosis i.e. nodular fat necrosis[10] and Torre's syndrome[6].

Treatment of the condition depends upon the site and the extent of disease.

A stage 4S disease may remit spontaneously[2]. Our patient seemed to have stage 4S because no evidence secondaries to any part of the body except the skin, was found, and hence our patient had a chance of good prognosis. A stage 4S disease is composed of a primary tumor stage 1 or 2, with spread limited to the liver, skin or bone marrow [2].

Prenatal diagnosis by ultrasound improves the prognosis[11] and survival may reach up to 90%[12]. Moppet J et al has an over all survival rate of 91%[2].

Initial bone marrow transplantation has given encouraging results[13].

CONCLUSIONS

The outlook for neuroblastoma is better than for any other tumour in the neonates.

The high risk of complications but good survival rates should be taken into account when counseling the parents.

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ORIGINAL ARTICLE

SHARP WASTE DISPOSAL PRACTICE AMONG GENERAL PRACTITIONERS

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ABSTRACT

Background: Overuse of injections is common in general medical practice in the developing countries, including Pakistan. This study was conducted to know the injection practices and the ways of sharp waste disposal adopted by the general practitioners.

Material & Methods: It was a cross-sectional study carried out during the month of June 2005, in the urban area of District Dera Ismail Khan, Pakistan. A survey of 30 general practitioners was conducted through purposive sampling selection. The study participants were interviewed, using structured questionnaire. Descriptive statistical analysis was used to analyze the results.

Results: All the 30 (100%) practitioners were using disposable syringes; no one was using non-disposable glass syringes. Regarding the nature of sharp instruments, all the 30 (100%) GPs were using syringes, 15 (50%) were using needles, 10 (33.34%) were using blades, 1 (3.33%) was using scalpel. In 8 (26.67%) clinics the doctor himself was administering the injections while in 22 (73.33%) clinics the technicians were administering these. There was no reuse of syringes in any of the clinics. Sixteen (53.33%) doctors were disposing their sharp waste in the municipality waste, while 12 (40%) were burying and 2 (6.67%) were burning it. No one was using specialized containers for sharp waste disposal. Eleven (36.67%) doctors were separating while 19 (63.34%) were not separating the needles prior to disposal of the waste. Seventeen (56.67%) doctors were using and 13 (43.34%) were not using safe needle devices. Regarding the method of sterilization, 29 (96.66%) doctors were using the boiling method, one (3.33%) was using the dry heat method and none of the 30 GPs was using chemical method or autoclave for sterilization. About 13 (43.34%) doctors were using 100-150 syringes, 10 (33.33%) were using 50-100 syringes and 7 (23.33%) were using 200 syringes per day.

Conclusion: This study highlights the overuse of therapeutic injections and unsafe disposal of sharp waste by general practitioners. Immediate and properly planned steps are required to be taken by Health authorities to ensure the public safety.

Key words: Sharp disposal, Health care waste, Hepatitis B, Hepatitis C.

INTRODUCTION

Any device or item having corners, edges, or projections capable of cutting or piercing the skin is called sharp. Sharps in a doctor's clinic include hypodermic needles, syringes with or without attached needles, Pasteur pipettes, scalpel blades, blood collecting vials, needles attached with tubing, culture dishes, suture needles, slides, cover slips and other broken or unbroken glass or plastic ware that have been in contact with infectious agents or used in patient care or treatment. Because of its characteristics, it may cause or significantly contribute to an increase in serious irreversible or incapacitating reversible illness or pose a potential hazard to the human health or the environment when improperly treated, stored, transported, disposed off, or otherwise managed.

Sharps represent about 1% of the total waste from health care activities throughout the world. Every year an estimated 12,000 million injections are administered. Not all needles and syringes are properly disposed off, generating a considerable risk of injury and infection and opportunities for re-use. A large majority, more than 90%, of these injections are administered for curative purposes. It is estimated that for one vaccination injection, 20 curative injections are administered.

World wide 8-16 million hepatitis B, 2.3-4.7 million hepatitis C and 80,000-160,000 HIV infections are estimated to occur yearly from the re-use of syringes and needles without sterilization. Many of these infections could be avoided if syringes were disposed off safely. The re-use of syringes and needles for injections is particularly common in cer-

tain African, Asian and Central & Eastern European countries.[1, 2, 3]

In developing countries, additional hazards occur from scavenging on waste disposal sites and manual sorting of waste recuperated at the back doors of health care establishments. These practices are common in many regions of the world and pose an immediate risk of needle-stick injuries and exposure to toxic or infectious materials.

In curative healthcare, injections are used to administer antibiotics and other medications. Today, safe and effective alternatives to injected medications are available and most medications used in primary care can be administered orally. Injections are mainly needed for the treatment of severe illness, mostly in the hospital setting. Nevertheless, injections are over used to administer medications in many countries because of preference for injections among healthcare workers and the patients themselves.

Injuries from sharp devices have been associated with the transmission for more than 40 pathogens, including Hepatitis B virus (HBV), Hepatitis C virus (HCV), and Human Immune deficiency virus (HIV). Among all the categories of waste, the "sharps" including syringes, needles, scalpel blades, etc, have the highest disease transmission potential. About 85% of sharp injuries are caused between their usage and subsequent disposal and more than 20% of those who handle them encounter "stick" injuries. The emphasis should be on safe handling. The use of needle cutters is of great help.

In many countries where hepatitis B and C are highly endemic, unsafe injection practices account for a large proportion of these infections. The proportion of new cases of hepatitis B that are attributable to unsafe injections was 60% in Taiwan in 1977 and 52% in Moldova in 1994. In Egypt, the proportion of new cases of hepatitis C due to unsafe injections was 40% in 1996. The burden of disease associated with HBV and HCV has been likened to a 'silent epidemic' as these diseases typically take about twenty years to evolve from infection to symptomatic chronic liver disease, cirrhosis and liver cancer.[4,5]

In addition to hepatitis B and C, unsafe injections may cause HIV infection as well. However, HIV is less efficiently transmitted through injections as compared to hepatitis viruses and unsafe injections pose far less risk than unprotected sexual intercourse in countries where HIV infection is endemic.[3,6,7] Injection practices in developing countries, like Pakistan, are often not safe.

This study was conducted to get information about the use of sharp instruments and the attribute of sharp waste disposal by general practitioners (GPs).

MATERIAL & METHODS

A cross-sectional survey of general practitioners in the city of Dera Ismail Khan (D.I. Khan), NWFP, Pakistan, having minimum qualification of MBBS, was conducted in the month of June 2005. After extensive literature search, a questionnaire was developed to collect information regarding disposal of sharp waste generated in the clinics of general practitioners. Thirty General practitioners were selected for interview by purposive sampling method. The study was explained to them and verbal consent was obtained.

The study participants were interviewed in their clinics regarding the following information:

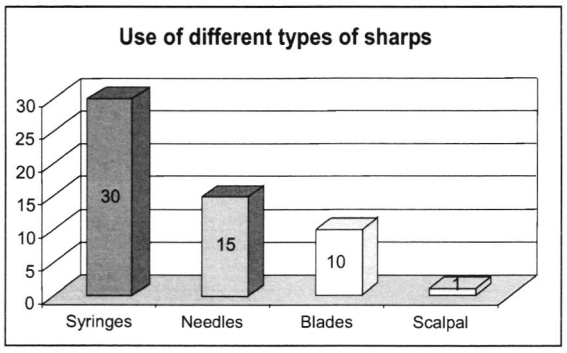
1. Type of syringes used.
2. Re-use of syringes, if any.
3. Syringe disposal methods.
4. Methods of sterilization of instruments.
5. Number of patients receiving injections per day.

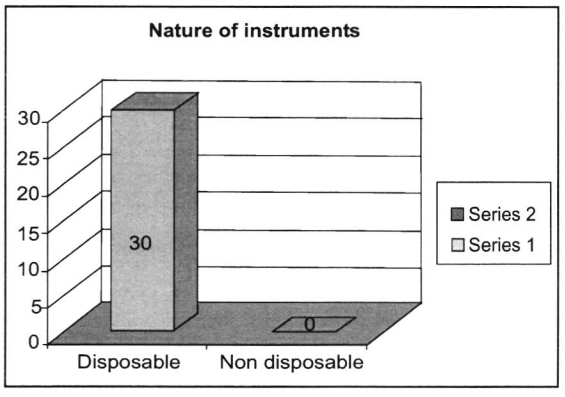
The data was analyzed and quantitative responses were obtained by descriptive statistical analysis.

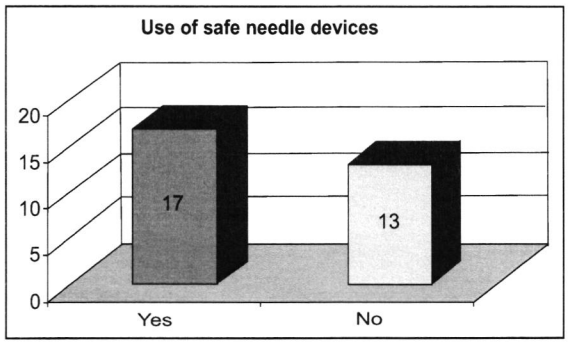
RESULTS

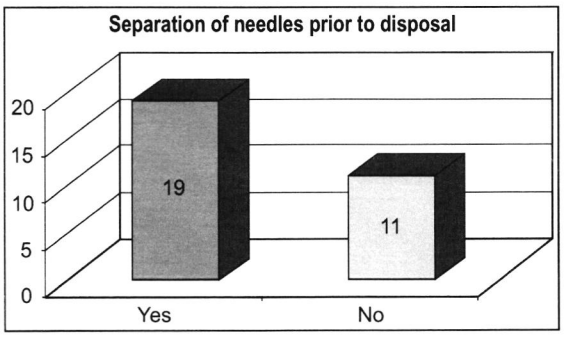
We were able to get the survey questionnaire from 30 general practitioners. All of them were running busy clinics. It was observed that injections were considered an essential component of the treatment. All of them (100%) were using disposable syringes and no one was using non-disposable glass syringes. Regarding the nature of the sharp instruments, all the 30 GPs (100%) were using syringes, 15 (50%) were using needles, 10 (33.34%) were using blades, 1 (3.33%) was using scalpel. In 8 (26.67%) clinics the doctor himself was administering the injections while in 22 (73.33%) clinics the technicians were administering these. There was no reuse of syringes in any of the clinics. Sixteen (56.67%) doctors were disposing their sharps in the municipality waste, while 12 (40%) were burying and 2 (6.67%) were burning. No one was using specialized containers for sharp waste disposal. Eleven (36.67%) doctor were separating while 19 (63.34%) were not separating needles from the syringes prior to disposal of waste. Seventeen (56.67%) doctors were using and 13 (43.34%) were not using safe needle devices. About the method of sterilization, 29 (96.66%) doctors were using the boiling method, 1 (3.33%) doctor was using the dry heat method and none of the 30 GPs was using chemical meth-

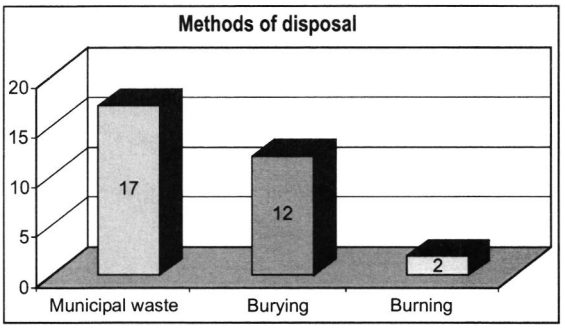
ods or autoclave for sterilization of instruments. Thirteen (43.3%) doctors were using 100-150 syringes, 10 (33.33%) doctors 50-100 syringes and 7 (23.33%) doctors 200 syringes per day.

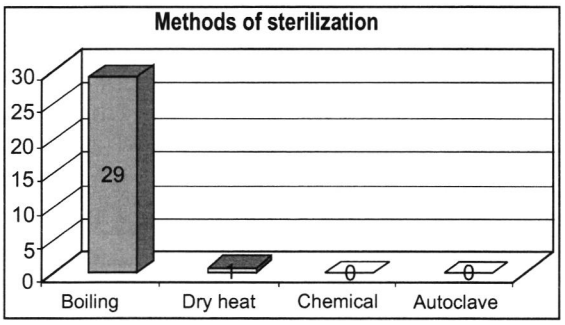












DISCUSSION

These results reveal that sharp waste disposal practices by the general practitioners in D.I. Khan city is unsafe. Our study reveled that the most frequently used sharp item was a syringe. All the doctors depicted good injection practice by using disposable syringes, which prevented the risk of spread of infection from one patient to another. In 73.33% clinics the technicians were administering the syringes while in only 26.67% the doctors were administering it themselves. The check on technicians was loose which risked unsafe administering or reuse of syringes.

None of the 30 doctors was using specialized containers for sharp waste disposal, instead they were using other convenient and unsafe methods for sharp waste disposal, such as the majority (56.67%) was throwing sharp waste into municipality waste which was then disposed off along with routine household waste. It poses a potential risk for municipality workers and garbage pickers and serves as easy sites to collect syringes for reuse. About 40% were burying sharp waste and thus causing environmental pollution especially water pollution. Only 6.67% were burning the sharp waste in open air. It is also not a good method for sharp waste disposal. It was a shock to find out that 96.66% of doctors were sterilizing the non-disposable sharp instruments with simple boiling. This method does not destroy the entire pathogenic organisms and retain the danger of transmitting infections to the patients. Only 3.33% of doctors were using dry heat method for sterilization. It is a good method of sterilization

provided the required amount of temperature and time is given.

A study conducted in Murree (Pakistan) revealed that 60% of doctors were throwing sharps in open air while 25% were disposing it off in the municipal waste.[8,9]

The lack of proper waste management, lack of awareness about its hazards and insufficient financial and human resources are the problems connected with disposal of medical waste. An essential issue is the clear attribution of responsibility of appropriate handling and disposal of the waste. This responsibility definitely lies on the waste producer, i.e. the health-care provider or the establishment involved in related activities.

CONCLUSION

This study highlights the overuse of therapeutic injections and unsafe disposal of sharp waste by general practitioners in the city of Dera Ismail Khan. Immediate and properly planned steps are required to be taken by Health authorities to ensure the public safety. Health authorities need to help general practitioners by properly registering them, arranging workshops for their continuous medical education and providing them with convenient ways for medical waste, especially sharp waste disposal.

Similar and larger studies are required in other cities and rural areas of Pakistan to quantify the gravity of the problem.

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