

## Evaluation of an emergency service attempted by the Saudi Red Crescent Society

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The Saudi Red Crescent Society (SRCS) plays an important role in the health care field. It is a welfare society working for all people to bring them out of disastrous situations such as road traffic accidents, fire, and floods or in any emergency state. Most of the patients are brought to hospital by some type of vehicle as private car or taxi. Some of the patients are brought to hospital by the SRCS service. This society is responsible to provide services at the places wherever any mishap takes place without any cost. One only needs to call 997. The society is supposed to be comprised of a squad of trained persons who can deal with emergency situations and vehicles (ambulances) equipped with measures of management of ABC (airway, breathing and circulation). The Emergency Medical Service (EMS) in Saudi Arabia is managed by each hospital through the SRCS. There are approximately 165 ambulance stations in the country, each with 2 ambulances.<sup>1</sup> Al-Noor Specialist Hospital is a tertiary hospital based in the Holy City of Makkah, Kingdom of Saudi Arabia, and its Emergency Room (ER) is one of the largest, well-equipped emergency departments among the hospitals of Makkah.

This study was carried out for only the month of Ramadan 1423H as Ramadan season is a religious period where around 2 million people attend Makkah to perform night prayers and Umrah. All the cases brought to the ER by the SRCS were included. The SRCS evaluation forms were provided by SRCS Head office and completed by the doctor on duty in the ER. The form included 2 parts: one related to the patients and second related to the general appearance of the team and its cooperation. Besides the patient's particulars, the final diagnosis, the arrival time of patients and in which shift they came was noted. Shift one started from 12 midnight to 8 am, shift 2 started from 8 am to 4 pm, and shift 3 from 4 pm to 12 midnight. The ABC management provided to the patient was also noted. It was further subdivided to 3 categories of management as correct insertion (x), wrong insertion (y), and required but not carried out (z). There were 3 further subdivisions as oral airway, nasal airway and endo tracheal tube (ETT) in airway management. Breathing management has also the same 3 categories as airway; (x), (y) and (z) but

here, oxygen mask and bag valve mask were also noted. For circulation management 7 points were noted in each of the 3 categories, as follows: 1. Intravenous cannula, 2. Fluid type, 3. Fluid amount, 4. Cardio pulmonary resuscitation, 5. Defibrillation, 6. Control bleeding and 7. Immobilization. The data from this form were recorded on a Red Crescent Work plan sheet everyday for the patients of the previous day in the ER office for daily feedback of cases.

A cohort of 673 patients was brought by the SRCS team, which comprises 2.6% of total (25,766) ER attendees of the same period. Out of the total documented data, males 429 (68%) were greater than females 203 (32%). The age range was 5 months - 100 years with mean age of 41.5 years. Age distribution revealed that the majority (171 [27.3%]) belong to the age group 41-50 years. A total of 423 (66.2%) patients were discharged after a few hours, 186 (29.1%) were admitted, 22 (3.4%) were discharged against medical advice (DAMA), 4 (0.6%) were referred and 4 (0.6%) patients died. The final diagnosis was recorded, and there were 199 (29.7%) cases of contusion, laceration, abrasions and cuts at various parts of body with ICD-10 code (T02/T14/ S00-99) on the peak. The arrival time of patients was recorded by which shift they arrived. Shift 3 has the maximum number (261 [38.8%]) of patients. The more elaborated form of presentation is that 4.7% of patients came on the weekend in the first week, however, double that at 8.3% came in the weekend of the fourth week. As such is the case for ordinary days, 2% on an ordinary day in the first week and 5.6% on an ordinary day in the last week. The remarks about the patients were also given by the doctor on duty, showing that almost 29 (5%) needed no ambulance to come to the hospital.

The most important part of the study was the ABC management provided by the team to the patients. In 642 (97.5%) of the cases airway management was not required, with only 16 (2.5%) cases requiring airway management. Out of this 16, only 3 (0.5%) received correct management, in 13 (2%) it was required but not carried out. A total of 208 (31.6%) cases required breathing management, and out of these 11 (1.7%) patients received correct management. In 4 (0.6%) the management was carried out incorrectly, and in 193 (29.3%) it was needed but not carried out as shown in **Table 1**. Circulation management was required the most by 347 (52.5%) patients. Out of this number, 257 (38.9%) received more than one type of circulatory management, 18 (2.7%) patients received the correct management, 10 (1.5%) received the wrong management and 62 (9.4%) patients required management, but it was not provided. Regarding the status of team management, in 436 (68.6%) cases

the general appearance of the team was good, in 115 (18%) cases team appearance was acceptable, in 83 (13%) it was very good and in 2 (0.3%) cases it was bad. For the team cooperation, it was good in 426 (66.5%) cases, acceptable in 134 (20.9%) cases but very good in 80 (12.5%) cases. The doctor on duty in the ER, and the number of patients they attended was also recorded. The maximum burden was on the doctors in the critical area. Approximately 80% of patients were attended to in this area, 14% of patients were attended by the doctors in the adult care area and the remaining patients were attended by doctors in the screening area. There was some missing information in collection of data for some variables, mainly the age 48 (7.5%), sex 41 (6.1%), outcome 34 (5%), and team cooperation 33 (4.9%). Furthermore, of the total subjects (73), there were 658 (97.8%) forms documented and 15 (2.2%) not documented as airway or breathing management.

Owing to different cultural backgrounds, epidemiological disease patterns as well as economic status, it is important to collect data regarding EMS, in order to direct our planning and to establish an appropriate EMS policy.<sup>2</sup> This study was conducted to evaluate the actual burden on the Red Crescent Society, its ambulances and its teams. Moreover, it also gives us an insight of burden and management in the largest Emergency Department in Makkah region. During the month of Ramadan people from all over the world come to perform Umrah. The results show male dominance, as males are victims of road traffic accidents and assaults and it also justifies our higher number of patients with the diagnosis of contusion, abrasion, and laceration

and cut wounds. Our results showed 423 (66.2%) discharged patients, reflecting that the cases brought by the SRCS are not critical, and supports our maximum diagnosis of cases of contusion, laceration, abrasion and cuts and secondly the good quality management in the ER. It also indicates that approximately 60% of cases misuse the ambulance, which could be avoided by changing the system to fit the behavior patterns of the patients.<sup>3</sup> The maximum number of patients arrived during the third shift, as people do night prayers and prefer to perform Umrah at night due to raised temperature and fasting during the day.

The most important point highlighted by the results of this study, is that exclusive training of ambulatory squad is required as they were not proficient at providing ABC management to the patients. In this respect care must be taken in providing the aid that is needed on the way to the ER to minimize losses and complications of delay or mismanagement.

A number of studies of this type had previously been conducted in European countries,<sup>4,5</sup> and unlike our study, other studies<sup>6-9</sup> concentrated upon the time factor that is taken to reach the scene spot. Similar to our study, are studies<sup>10-14</sup> whose aim was to access the EMS and outcome of victims of the Red Crescent Society services. There was missing or undocumented data for almost every variable, which reflects the burden on the ER at this particular time. Therefore, the number of doctors in the ER, especially in the critical care area should be increased and their schedule allocations should be changed during the month of Ramadan and Hajj.

Table 1 - Airway and breathing management.

Management	Not required n (%)	Correct insertion of			Wrong insertion of			Required but not given			
		X1 n (%)	X2 n (%)	X3 n (%)	Y1 n (%)	Y2 n (%)	Y3 n (%)	Z1 n (%)	Z2 n (%)	Z3 n (%)	>1 n (%)
Airway (N = 658)	642 (97.5)	1 (0.2)	- (-)	2 (0.3)	- (-)	- (-)	- (-)	4 (0.6)	- (-)	5 (0.8)	4 (0.6)
Breathing (N = 658)	450 (68.4)	11 (1.7)	- (-)	- (-)	4 (0.6)	- (-)	- (-)	181 (27.5)	6 (0.9)	1 (0.2)	5 (0.8)

Airway management: X1= Correct insertion of oral airway. X2= Correct insertion of nasal airway. X3= Correct insertion of endo tracheal tube.  
Y1= Wrong insertion of oral airway. Y2= Wrong insertion of nasal airway. Y3= Wrong insertion of endo tracheal tube. Z1= Required but not given insertion of oral airway. Z2= Required but not given insertion of nasal airway. Z3= Required but not given insertion of endo tracheal tube.

Breathing management: X1= Correctly applied oxygen mask. X2= Correctly applied bag valve mask. Y1= Wrongly applied oxygen mask.  
Y2= Wrongly applied bag valve mask. Z1= Required but not applied oxygen mask. Z2= Required but not applied bag valve mask.  
> 1= More than one required.

This study demonstrates a constant quality of care provided 24 hours per day, 7 days per week in the participating hospital.

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New intralesional therapy for basal cell carcinoma by 2% zinc sulphate solution

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**B**asal cell carcinoma (BCC) is the most common skin tumor all over the world.<sup>1,2</sup> There are many standard therapeutic modalities used in treatment of BCC including surgical excision, curettage with electrodesiccation, cryotherapy, and radiotherapy.<sup>1,2</sup> Moreover topical remedies such as 5-fluorouracil, tazarotene, imiquimod and topical photodynamic (5 ALA) also have been used.<sup>1,2</sup> Intralesional therapies have been tried using interferon alfa (2a, 2b) and cytotoxic drugs such as 5-fluorouracil, bleomycin; however many side effects were encountered with these medications.<sup>1,2</sup> Zinc sulphate 2% solution has been used successfully in treatment of cutaneous leishmaniasis and verrucae vulgaris by intralesional infiltration.<sup>3,4</sup> The aim of present work is to evaluate therapeutic effects, safety and cosmetic results of intralesional zinc sulphate (2%) solution in the treatment of BCC.

This is an open-label case interventional study conducted at the Department of Dermatology and Venereology, Baghdad Teaching Hospital, between March 2002 and March 2003. Formal consent was obtained from all treated patients. A detailed history was taken from each patient regarding the following points: age, gender, address, duration of the disease and the number of the lesions. Symptoms related to the lesion such as pain, itching and tenderness were recorded. Patients were also assessed to determine sites involved, size, numbers and characters of the lesions. Large lesions exceeding 1.5 x 1.5 cm in diameter were not recruited. Shaving or incisional biopsies were performed for histopathological confirmation of the disease for each patient. The preparation of 2% and 4% zinc sulphate solution (ZnSo4.7H2O) were carried out by dissolving of zinc sulphate powder (ZnSo4.7H2O) in 98 and 96 mls of sterile distilled water and autoclaved at 95°C for 20 minutes and kept in the hospital for use until the end of this study. Two percent Xylocaïne solution as local anesthetic was mixed with 4% zinc sulphate solution to reach the final concentration of 2% and used to abolish the pain during injection in a number of lesions. Seventy percent ethanol was used as topical antiseptic agent before injection. Disposable syringe with 27-gauge needle was used. The lesion

was fully infiltrated with the drug thoroughly until complete blanching was achieved in case of nodular and superficial types while in noduloulcerative lesions they were injected at the periphery towards the center. The amount of solution required was 0.1-2 ml and occasionally more depending on the size of the lesion. Acral parts of the body such as tip of the nose were avoided and also deep subcutaneous injection was not encouraged to avoid necrosis of deep tissue. Patients were seen at 2-week interval and injections were repeated when it is needed. Excisional biopsies were taken from 5 clinically cured lesions after 4 months following injections. At the end of the 8 months of follow up, all patients with treated BCC were re-evaluated for any possibility of relapse.

Eleven patients (10 males and one female) with BCC were included in this study; they had 100 lesions ranging from 1 to 46 per patient (one of the patient had Gorlin's syndrome) with a mean $\pm$ SD of 13.72 $\pm$ 9.18 median of 2. Their ages range from 46 to 70 (61.18 $\pm$ 9.60) while the duration of the disease was between 7 months and 36 years (11.35 $\pm$ 8.49) (median: 2). A total of 100 lesions of BCC, 48 [48%] nodular, 45 [45%] superficial pigmented, 6 (6%) noduloulcerative and one (1%) cystic were infiltrated with zinc sulphate solution. Thirty lesions were injected with 2% zinc sulphate solution while 70 lesions were infiltrated with 4% zinc sulphate solution and 2% Xylocaine. The sites of lesions were 43 (43%) on the scalp, 34 (34%) on the face, 21 (21%) on the cheek and 2 (2%) on the chest. The number of injections for each lesion ranged from 1-4 injections (2.06 $\pm$ 0.961). All lesions showed clinical cure: 18 (18%) lesions after first injection, 52 (52%) lesions after second injections, 29 (29%) lesions after third injections and one (1%) lesion after the fourth injection. The infiltration without Xylocaine was painful for few minutes in all treated lesions. Local redness swelling and tenderness were observed in all; lesions showed local necrosis with formation of black eschar that stayed for 10-14 days and then fell down as shown in **Figure 1a and 1b**, leaving atrophic scar, which gradually disappeared over time leaving a good cosmetic appearance at the end of 8 months, follow up. Any patients complained no systemic side effects. In 4 patients, the itching and tenderness of the lesion were disappeared after the first injection of zinc sulphate solution. Follow up for 8 months showed no relapse in all treated lesions. Biopsies from 5 treated lesions after 4 months of follow up showed no residual malignant cells. The present work showed that local injection of BCC with 2% zinc sulphate solution provide

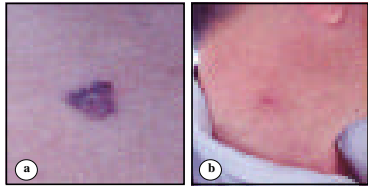


Figure 1 - A solitary lesion of basal cell carcinoma on the neck a) before treatment b) 4 weeks after injections.

encouraging results, this local infiltration often cause local necrosis and death of the tumor cells.<sup>3,4</sup> The mechanism of action cannot be speculated, although it has been reported that zinc sulphate has local cytotoxic effects.<sup>5</sup> Similarly zinc sulphate cause local necrosis in treatment of verrucae vulgaris and cutaneous leishmaniasis through intralesional way.<sup>3,4</sup> So the mode of action of local injection is mainly through necrosis of lesional tissue.<sup>3,4</sup> The number of injections needed was 1-2 injection to achieve the cure. The maximum duration of healing is maximum one month after the first or second injections. This therapy lacks any local side effects apart from swelling and erythema. Also, no systemic side effects were observed in any patient. The results of local injection with other drugs like bleomycin and interferon alfa were not encouraging in addition to the systemic side effects such as flue or illness that are associated with local injection of these remedies. Also they take longer duration to achieve healing of lesions in comparison with 2% zinc sulphate solution infiltration.<sup>1,2</sup> These drugs might be costly when compared with local 2% zinc sulphate solution. Thus, this new mode of management seems to be a very successful therapy of skin tumors such as BCC; and it should be advised in treatment of all cases of BCC especially in elderly individuals, when tumors are multiple and small size. Intralesional zinc sulphate is a safe, inexpensive, non-surgical and can be performed easily even by general practitioner with excellent cosmetic results. The mode of action cannot be speculated but it definitely works through inducing local necrosis of lesional tissue.

In conclusion, this is a new effective, safe, non-costly local therapy of BCC. It is advised in all patients and in all types of BCC especially when the number of lesions is multiple, small and in elderly individuals.

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*This article was not proof read prior to publication due to unavailability of authors.*

## Errata

In manuscript "Combined parathyroid adenoma and an occult papillary carcinoma" Saudi Medical Journal 2004; Vol. 25 (11): 1707-1710, the authors names should have appeared as follows: Abdul-Wahed N. Meshikhes, Sohail A. Butt, Basima A. Al-Saihati.

In Authors Index of Saudi Medical Journal Vol. 25 July - December 2004, the author name should have appeared as follow: Al-Ojaimi E, 1032.