CASE REPORT

Complications of dysgerminoma: meeting the health needs of patients in conflict zones

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Accepted 6 January 2017

SUMMARY

A symptom of prolonged conflict is the destruction of infrastructure and healthcare systems. While the need for acute trauma services is obvious in conflict zones, patients with chronic diseases also require care. This report describes the clinical course of a young teenage girl with a large mid pelvic tumour originating from the left ovary and reaching the umbilicus. She presented with acute abdominal pain and underwent surgery in a healthcare facility within a conflict zone. She was then transferred to a neighbouring country for continuing care. The tumour is malignant. After further surgery, she required chemotherapy and will need ongoing surveillance. She has since returned to her home country. It is doubtful that she will be able to access all the care she needs. We describe her healthcare needs and discuss the disastrous effects of conflict on meeting the health needs of civilian populations in war zones.

CASE PRESENTATION

A young teenage girl was admitted to a civilian district hospital with symptoms of gastric outlet obstruction and sepsis. Her symptoms began 1 month earlier (in her home country) with abdominal distension, nausea and vomiting after meals. She had lost weight and was not able to eat. She underwent laparotomy and biopsy of a large pelvic mass in her home country and was then transferred ~48 hours later to our facility due to unavailability of resources back home.

On arrival, she was emaciated and dehydrated. She was septic and vomiting. Serum haemoglobin was 9.6 g/dL, white cell count 10.8×10^3 and platelet count 1207×10^3 . She was resuscitated with intravenous fluid, started on a course of antibiotics and CT of the abdomen and pelvis was performed. The CT scan demonstrated the presence of a large pelvic mass extending up into the abdomen with the presence of a foreign body and surrounding abscess. Both ureters were obstructed, resulting in bilateral hydronephrosis, and there was gastric outlet obstruction (figure 1). A pigtail catheter was inserted in order to drain the abscess. After the drainage of 500 mL of seropurulent fluid, the patient underwent laparotomy.

At laparotomy, a retained large abdominal gauze swab was found in the abdomen. Compressing the antrum of the stomach, this was responsible for the patient's symptoms of gastric outlet obstruction. A large mass, previously incised, was found to be arising from the pelvis. The mass was biopsied and the abdomen lavaged, then closed.

Histological examination of the biopsy specimen indicated the pelvic mass to be a dysgerminoma (germ cell tumour). After a course of antibiotics and refeeding, the patient underwent further laparotomy and excision of the mass arising from the left ovary. The uterus, Fallopian tubes, right ovary and ureters remained intact. Further histological examination confirmed dysgerminoma ($9 \times 16 \times 18$ cm in size) with multiple areas of necrosis and vascularised spaces. Three para-aortic lymph nodes were affected (figure 2).

The patient made an uneventful postoperative recovery and remained in hospital for chemotherapy—four courses of cisplatin, etoposide and bleomycin in 28-day cycles. A CT scan on completion of chemotherapy showed no evidence of residual disease. The patient then returned to her home country. Until now, 9 months later, there has been no follow-up and no news of her progress.

GLOBAL HEALTH PROBLEM LIST

- The health needs of civilians in conflict zones
- The destruction of health infrastructure in conflict zones
- Options for the treatment of those in need of medical care in neighbouring countries

GLOBAL HEALTH PROBLEM ANALYSIS

Dysgerminoma is a solid germ cell tumour. Haemorrhage and necrosis are common. These may have been the reason for the patient's initial presentation with acute onset abdominal pain. Although there was no medical information available from the surgeons who performed the first laparotomy, it seems reasonable to assume that diagnostic laparotomy was performed due to acute abdominal pain, the mass was biopsied, and a large gauze pack was left in the abdomen in order to achieve haemostasis. It is unclear why she did not undergo further surgery, but it is doubtful that histological examination was possible and she was transferred out of a conflict zone for further care. The delay in transfer for definitive care resulted in sepsis, gastric outlet obstruction and dehydration.

Her treatment in our hospital was based on the history she was able to give, and what her aunt, accompanying her, was able to share about her care. Both the patient and carer appeared undernourished and exhausted.

Chemotherapy is recommended for all patients with germ cell tumours, except for those with stage I tumours. This should begin within 10 days of surgical exploration because of rapid tumour growth.¹

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To cite: Hayari L, Shir On E, Fedorenko A, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2016-217787

Figure 1 How conflict affects health: complications as seen on an abdominal CT. (A and B) Gastric outlet obstruction. (C) Bilateral hydronephrosis.

Figure 2 Specimen of the dysgerminoma.

It was agreed that the patient remain in this hospital for chemotherapy as it was unlikely that treatment would have been possible in her home country. It is of great concern that after her return home, follow-up is not possible and no information is available about her clinical progress. There is no question that her diagnosis and treatment were influenced by the destruction of healthcare systems in her home country. Medical treatment in a neighbouring country is one alternative to healthcare delivery but renders long-term follow-up unlikely.

The health needs of civilians in conflict zones

According to the Armed Conflict Database of the International Institute for Strategic Studies,² in 2014, there were 42 active conflicts in progress in the world with over 180 000 fatalities and 12 million refugees. In South Sudan alone, for example, it is estimated that 1.6 million people have been internally displaced by conflict,² in Syria 6 million³ and in Libya 430 000.⁴ Large-scale destruction of health services is a feature of modern warfare^{5–8} which today tends to be intrastate (civil war) rather than interstate.⁹ Whereas at the time of the World War I 90% of the injured were combatants, by the end of the last century 90% of casualties were civilian.¹⁰ The demand on in-country health services is, therefore, profound, and the destruction of these services a humanitarian disaster, as delivery of the most basic in emergency care becomes a challenge.¹¹ Prohibitive access of humanitarian organisations to populations most in need of assistance (the shrinking humanitarian space) further compounds the challenge of delivering basic healthcare to the most vulnerable.^{12 13}

During conflict, there is a demand to meet the needs of the injured; also, pregnant women, children, the elderly and patients with chronic health conditions are among the first to be deprived of the essential healthcare,^{14–17} including vaccines and essential drugs. Local production of pharmaceutical drugs in

Syria, for example, has fallen from 90% to 10%.¹⁸ Food insecurity, malnutrition and the lack of electricity and clean water compound pre-existing chronic disease, exacerbate childhood illness and impair the care of the elderly.^{19–21} The new reality of living in crowded camps and shelters itself is a major cause of mortality due to waterborne disease outbreaks such as cholera, typhoid and dysentery. In refugee camps in Iraq during and postwars, diarrhoeal diseases were responsible for 25–40% of deaths in the acute phase of the emergency. 80% of them occurred in children under 2 years of age.¹⁷

The resurgence of poliomyelitis and measles among populations affected by conflict may be directly attributed to a failure of vaccination programmes where coverage is as low as 45% as a result of the disruption of essential health services:^{22 23} “The low immunization rates among those living in and fleeing from conflict zones, endangers the lives of people across the entire region. The recent outbreak of polio in Syria led to its resurgence in Iraq, which had been free of the disease for 14 years. In 2013, Jordan experienced an outbreak of measles which was attributed to Syrian refugees at a time when the Hashemite kingdom was about to announce the disease’s eradication,” according to Dr Ala Alwan, WHO Regional Director for the Eastern Mediterranean.²⁴

Also spreading through vulnerable populations in Syria and populations displaced to neighbouring countries are hepatitis A, leishmaniasis, meningitis and scabies.^{22 25 26}

Health indices in conflict zones are stark reminders of the medium-term and long-term consequences of conflict. After 14 years of civil war in Liberia, in 2003, the under-5 mortality rate was 110/1000 live births and the maternal mortality ratio was 994 deaths per 100 000 live births (an increase of 71% from the maternal mortality rate in 2000).^{15 27} Even as recently as 2015 and 2010, the under-5 mortality rate and maternal mortality rate remain alarmingly high at 70/1000 live births and 770/100 000 live births, respectively.^{28 29}

Where conflict compounds and inhibits the development of healthcare services, health indices are worse still: ‘maternal mortality ratios in Afghanistan are among the highest in the world, due to a combination of persistent poverty and conflict, at ~1600/100 000 live births in 2002. According to a 2000–2002 reproductive age mortality study, figures ranged from 418 in Kabul to 6507 in Ragh district, Badakshan province, the highest maternal mortality ratio ever recorded. Even though Ragh district was not directly affected by conflict, it was affected by the general paucity of health services found in Afghanistan. It is in a remote region in the Hindu Kush mountains, up to 10 days’ ride or walk from the nearest hospital with emergency obstetric care. Given the high total fertility rates, these figures translate into a total lifetime risk of maternal death of 1 in 42 in Kabul and 1 in 3 in Ragh district. On the basis of such figures, Afghanistan can be considered the worst place in the world to become pregnant’.³⁰

The destruction of health infrastructure in conflict zones

The destruction of infrastructure in war is an intentional consequence of military strategy, targeting communication and support lines so that electricity, telecommunication, roads, bridges, train lines, airports and seaports (that have taken decades, even centuries to develop) are destroyed.³¹ This destruction is compounded by a rise in criminality, looting, damage to public services and private property (Hoeffler A, Reynal-Querol M. Measuring the costs of conflict. Unpublished, 2003. http://www.conflict-recovery.org/bin/2003_Hoeffler_Reynal-Measuring_the_Costs_of_Conflict.pdf).^{5 8 15 17 32 33}

The flight of trained workers, health, education and public sector professionals, disruption of clean water supply, destruction of agriculture and food production,^{3 5-8 34} and the diversion of government funds from public services to military spending³³ further destroy infrastructure. In Syria, the number of operational health facilities and healthcare professionals available is reported to be half of prewar levels.³

History has shown that in areas with prolonged conflict and underdevelopment, establishment and rebuilding of functioning public services is difficult to effectuate. Afghanistan, for example, 'has one of the worst road systems in the world, and no rail system. Among landlocked developing countries, Afghanistan has one of the longest distances to a seaport, more than 2000 km, over harsh terrain. Huge portions of Afghan's inhabitants remain physically cut-off. The major urban areas of Afghanistan are connected by a poorly maintained and partially destroyed ring road. Afghanistan's air transport industry is based on a weak institutional framework. In the absence of operational regulatory mechanisms, Afghanistan's risk profile is unacceptable, and discourages international air carriers from identifying Afghanistan as a destination of choice',³⁵ which discourages investment and further impedes recovery.

In his 2009 overview of healthcare in Afghanistan, Acerra *et al*³⁶ states that "82% of the entire population lives in districts where primary care services are provided by NGOs under contracts with the Ministry of Public Health of Afghanistan or through grants. Much money and effort has been put into establishing tertiary care hospitals, but a coordinated health care infrastructure has not yet been developed in this country. Consequently, many are still living without access to primary health care. An estimated 70% of medical programs in the country have been implemented by aid organizations. Although these organizations are somewhat successful, access to health care remains a problem. There is a major shortage of a health care workforce in Afghanistan. World Health Organization data show that there are only 6000 physicians and 14 000 nurses for a population of 28 million people."

Danger to healthcare personnel remains a constant threat to a real limitation of the provision of essential care.³⁷ According to Dr Ala Alwan, "Attacks against health workers and facilities in Afghanistan increased by 50 percent in 2015. Syria is now the deadliest place in the world for health workers, reducing the availability of an already limited number of health care workers."³⁸ The Health Care in Danger project of the International Committee of the Red Cross (ICRC)³⁹ further describes the diminution of the humanitarian space and consequences to the delivery of essential healthcare as a result of violence against healthcare personnel, health facilities and vehicles such as ambulances. According to ICRC figures between 2012 and 2014, 4200 people have suffered as a result of violence against healthcare, 50% were around or inside healthcare facilities, 598 healthcare workers were killed, wounded or beaten,

and 700 medical transports (including ambulances) have been affected. Violence may range from 'bombing, shelling, looting, forced entry, shooting into, encircling or other forceful interference with the running of healthcare facilities (such as depriving them of electricity and water)' and health services disrupted may be 'hospitals, laboratories, clinics, first-aid posts, blood transfusion centres, and the medical and pharmaceutical stores of these facilities'.

These data and cases such as this patient's necessitate the research of options for healthcare delivery to casualties in areas of conflict. The option described in this case was for care in a neighbouring country.

Options for medical care in neighbouring countries

The treatment of the war wounded in neighbouring countries, not formally engaged in conflict, is not new. The field hospital of the ICRC in Lokichoggio, Kenya, 20 miles from the border with Sudan at civil war before the secession of South Sudan, is perhaps the best known.⁴⁰ Similarly, the ICRC operated through field hospitals in Pakistan during conflict in Afghanistan.⁴¹ Turkey, Lebanon and Jordan have received over two million Syrian refugees in need of acute medical attention; the prevention and treatment of infectious diseases and treatment of chronic conditions poses a prohibitive challenge to the healthcare services of these nations.⁴²⁻⁴⁴ Since 2013, Israel has treated over 2000 injured patients from Syria.⁴⁵ The potential to offer high-quality care to a most vulnerable population across national borders warrants further examination as the international community seeks solutions to meeting healthcare needs in conflict zones and postconflict zones begin to reconstruct their cancer care facilities.⁴⁶

Learning points

- ▶ Conflict results in the destruction of healthcare services and infrastructure essential to health and healthcare delivery.
- ▶ Modern warfare, frequently civil war, largely affects civilian populations.
- ▶ Conflict adversely affects all aspects of health—from the management of war injuries to the availability of essential drugs for the treatment of chronic conditions.
- ▶ The danger to healthcare personnel and health facilities further compounds the delivery of healthcare.
- ▶ The option of treatment in areas across borders in nations not actively engaged in conflict warrants further examination as a potential solution to meeting the health needs of vulnerable populations.

Contributors ESO and AF have written and edited the manuscript. LH, Szvalb, Zidan and ES have all reviewed and approved the manuscript.

Competing interests None declared.

Patient consent Not obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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