

Leishmaniasis unleashed in Syria

Health care in Syria has been decimated by war, but it has largely been spared the usual diseases of conflict. Instead, other infections are spreading like never before. Talha Burki reports.

As Syria prepares to enter its seventh year of war, the tide seems to have turned in favour of the Assad regime. Government forces over-ran Aleppo at the end of 2016, assisted by air support from Russia. President Bashar al-Assad has now regained control of all the major population centres in the country, including the four largest cities. As *The Lancet Infectious Diseases* went to press, a ceasefire had been agreed. It was intended to act as a prelude to peace talks, but few people expect Assad to give up the fight while swathes of the country, including Idlib governorate, are in the hands of the rebels. Besides, 1.4 million Syrians still live under the rule of Islamic State. The so-called caliphate sprawls across the border into Iraq (while the regime was busy besieging Aleppo, Islamic State retook Palmyra). It is inconceivable that any kind of settlement will leave the caliphate intact; ceasefire or not, 2017 is likely to see a great deal of suffering in Syria.

An estimated 400 000 Syrians have already lost their lives. 4.8 million people have fled the country, mostly to neighbouring states. A further

6.3 million are internally displaced. 12.8 million Syrians are in need of health assistance, and more than two-thirds of the population lives on less than US \$2 per day. It adds up to what the UN High Commissioner for Refugees, Filippo Grandi, describes as “the biggest humanitarian crisis of our time”.

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Still, Syria has been spared some catastrophes. Despite two-thirds of the population lacking access to safe water supplies, including 4 million people in Damascus, there have been no major outbreaks of diarrhoeal diseases. “There have been scattered, limited outbreaks of waterborne diseases but nothing serious”, noted Ghada Muhjazi (WHO, Damascus, Syria). She attributes the absence of cholera to the efficiency of the aid agencies responsible for water and sanitation. “We expected outbreaks in Damascus and Aleppo, but the groups involved in WASH are very good—they do not distribute any water until its quality has been confirmed”, she said. The high levels of education among many in the Syrian population is also likely to play a part; people tend to be aware of the necessities of hygiene.

It is difficult to define the exact burden of disease from those parts of the country under opposition control, although non-governmental organisations working in these regions do conduct their own surveys. The caliphate is much too hazardous for aid agencies to enter—little is known about the state of public health there. “If there is a disease

outbreak in the eastern part of Syria under Islamic State, we would not be able to follow it up”, explained WHO’s Elizabeth Hoff. Anecdotal evidence alongside the reported data suggest that cases of measles and pertussis increased somewhat after the onset of war, but without breaking into epidemics. In 2016, WHO supported three nationwide immunisation drives. The polio campaign that took place over 5 days in October reached 83% of the targeted 2.8 million children.

“At the moment, the major problem is not disease outbreaks but the provision of health care and its accessibility”, affirmed a doctor from the Syria Relief Network, an umbrella organisation for a wide range of non-governmental organisations working in the country. 4–5 million Syrians live in locations classified as besieged or hard to reach. “In the besieged areas, there are restrictions on any humanitarian access”, said the doctor. “Predefined convoys can bring in essential medicines such as antibiotics but they do not know how much is needed”. Stories abound of humanitarian assistance being denied, and of supplies being removed from medical convoys. Then there are the attacks on health facilities. More than 100 such incidents occurred in 2016, and there are allegations that hospitals are being deliberately targeted. Hundreds of medical staff have been killed and many more have fled.

It complicates efforts to control tuberculosis. Before the conflict, Syria did not have a high burden. But this could change, especially given the overcrowded and impoverished conditions in which many people live. The country formerly hosted a specialised tuberculosis centre and



Damage from a rocket attack at Tall Rifaat Hospital, Syria.

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over 1700 facilities where patients could obtain treatment for the disease. The centre has closed, and the number of facilities has been halved. "Access to diagnosis and medication in hard-to-reach areas is very challenging", said Hoff. "I am concerned that we will start to see more and more multidrug-resistant tuberculosis as a result of all the interruptions in treatment".

Although the epidemics commonly associated with conflict have failed to take hold in Syria, cases of leishmaniasis have surged. Cutaneous leishmaniasis has been endemic to northern Syria since at least the 18th century—the infection was formerly known as Aleppo boil. In the years approaching the conflict, Syria was reporting 25 000–40 000 cases a year. "With the war and the collapse of the whole health system, control efforts ended", noted Alvaro Acosta-Serrano (Liverpool School of Tropical Medicine, Liverpool, UK). Aleppo and Idlib, where the sandfly vector is prevalent, fell to rebel forces. The government bombarded the region, reducing Aleppo to rubble and exponentially multiplying the breeding sites for the sandfly. Garbage collections ceased, offering even more breeding sites. The factory outside Aleppo that made the glucantime to treat the disease was destroyed (Syria used to produce 90% of all the drugs it needed).

Richard Allan of the MENTOR Initiative, a non-governmental organisation that has coordinated the response to the outbreak in Syria with support from WHO, estimates that the country had over 100 000 cases of cutaneous leishmaniasis in 2014. The conflict has substantially escalated transmission. When MENTOR entered Syria, they heard stories of battery acid being poured onto patients' lesions. The drugs in use tended to be ineffective and there were individuals whose entire face had been destroyed. Moreover, the massive displacement of people had spread cutaneous

leishmaniasis to parts of the country that were not previously identified as hotspots. "Cutaneous leishmaniasis was largely considered an urban problem centred around Aleppo and Idlib, but now it is everywhere, from Iraq to the Lebanese borders and beyond", said Allan.

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Today, the situation is improving. Allan reckons this year around 60 000 people will become infected. "People have been highly receptive to household interventions, we have been able to conduct indoor residual spraying campaigns in homes and camps, distribute insecticide treated nets, standardise the drugs and diagnostics, and train health-care workers to administer the injectable treatment", he told *The Lancet Infectious Diseases*. With cutaneous leishmaniasis affecting virtually every family in the areas where MENTOR works, the population hardly needs persuading of the need for precautions. Funding remains scarce—the money made available for leishmaniasis control has decreased over the past year. The health cluster for Syria received only 26% of the total funds it requested for 2016 (the overall UN humanitarian appeal for Syria was less than half funded).

The effects of cutaneous leishmaniasis are easy to see: disfiguring lesions, usually on the hands or face. Visceral leishmaniasis is trickier to diagnose. It is often mistaken for other diseases or malnutrition. This error can be problematic: without treatment, visceral leishmaniasis is almost always fatal. But it has historically affected only a few Syrians every year. There are indications that this might no longer be the case.

MENTOR recently surveyed a randomly chosen sample of 4226

residents in two villages in Idlib. One in 500 individuals tested positive for visceral leishmaniasis. MENTOR has confirmed visceral leishmaniasis cases in four districts surrounding the survey sites. "If you extrapolate the survey results (19 cases per 10 000 people) for those four districts, which have a total population of 1 275 000, it would come to 1100 cases at any one time in the year—that is extraordinarily worrying", said Allan. Moreover, this is a region traversed by enormous numbers of displaced people crossing from Aleppo to Turkey. There have been tales of people dying from unknown causes, but if the death toll from visceral leishmaniasis is as high as the survey implies, it would be second only to mortality from the war itself.

Needless to say, this will require confirmation. "We desperately need more studies in communities which have similar geographic factors to the ones we have just surveyed, and we need to do them all the way across northern Syria", stressed Allan. The proliferation of sandflies caused by the conflict, coupled with the flow of people into the suspected hotspots in Idlib would certainly explain why cases of visceral leishmaniasis have risen. If the suspicions prove well founded, then the hundreds of thousands of evacuees from Aleppo are at risk. "It is an extremely fragile situation", said Allan.

It remains hypothetical for now. But if visceral leishmaniasis has been freed from whatever was restricting it in the past, the consequences for many living in the war-torn areas of Syria and Iraq could be very serious. Pending the results of the confirmatory surveys, acting as if the disease is already present would be valuable preparation for any news that it is. Scaling up mobile clinics, stepping up vector control, and rolling out rapid diagnostic tests would be a good start.

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