Lumpy skin disease outbreak in Israel 2012
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Introduction
Israel's location in the eastern part of the Mediterranean basin at the junction between continents poses the risk of exposure to infectious diseases considered to be endemic in neighboring countries. Lumpy skin disease (LSD) outbreaks (1989, 2006, 2007) in Israel occurred in the summer months, in the southern dairy and beef farms, following outbreaks in Egypt and the Gaza Strip. Surveillance and prevention by annual cattle vaccination with sheep pox vaccine were carried out in the central and southern districts of the state. The index case in the 2012 outbreak was in July, in naïve beef cattle herds pasturing at an altitude of 2,000 m in the northern district where the Syrian, Israeli and Lebanese borders meet. After implementing control measures such as vaccination, cattle movement restriction and culling, the current outbreak was mostly contained within 9 m from emergence.

Etiology and epidemiology
LSD is a severe infection in cattle caused by the LSD virus of the genus Capripoxvirus. The virus is transmitted mechanically by partially undefined blood-feeding insects. The incubation period lasts 2–4 weeks. The index case in the current outbreak occurred in a beef cattle herd, presenting "sit-fast" lesions, which generally appear 1 month post infection.
Table 1 – Morbidity, case fatality and mortality rates in the 2012 LSD outbreak in Israel.

<table>
<thead>
<tr>
<th>Herd type</th>
<th>Exposed heads</th>
<th>Morbidity rate %</th>
<th>Case fatality rate %</th>
<th>Mortality rate %</th>
<th>Euthanyzied rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef cattle</td>
<td>25,147</td>
<td>1-95</td>
<td>0 - 25</td>
<td>0 - 25</td>
<td>0.06</td>
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<tr>
<td>Dairy cattle</td>
<td>22,219</td>
<td>1-90</td>
<td>0 – 0.05</td>
<td>0.2</td>
<td>1.5</td>
</tr>
</tbody>
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Clinical signs

High fever due to generalized lymphadenopathy, dyspnea, profuse drooling, limb edema, and large numbers of flat-topped, coin-sized cutaneous lumps. Postmortem examination revealed nodules on the kidneys, lungs, gut and testicles.

Figs. 1, 3 – Systemic appearance in dairy cows yielding 40 kg one day prior and nil milk production at presentation: fever of 41°C, nodules, edema.

Figs. 2, 5 – Nodular, flat, coin-shaped lesions on testicles and teat in dairy cattle.

Fig. 4 – Charolais breeding bulls. Note subiliac lymph node enlargement and multiple lumps on the trunk.

Control

Vaccination of all susceptible cattle in the first months post emergence in the northern districts of the country was performed with live attenuated sheep pox strain RM-64 (Jovac, Jordan), due to antigenic resemblance between lumpy skin disease.
virus and the other pox viruses. Since vaccinated cattle challenged by natural infection were found to be unprotected and presented disease symptoms, a safety trial for a sheep pox vaccine with 10-fold the number of viruses per dose (Pox10, Jovac) and the Neethling strain vaccine (OBP, South Africa) was carried out. Upon approval, all of the country's susceptible cattle were revaccinated with these vaccines. Their efficacy will be evaluated under natural viral challenge, by monitoring morbidity and mortality rates in 15 selected dairies, which were not exposed to LSD at the time of vaccination. In the present outbreak, selective culling of all new cases was performed daily in infected dairy herds to limit the extent of morbidity. Daily control of insect burden was carried out by using fly repellants and fans operating nonstop at the dairies to repel blood-feeding insects. In extensive grazing beef herds, insecticides were used to supplement vaccination.

Discussion

The current and past LSD outbreaks in Israel pose a hazard for naive cattle that are at risk of contracting emerging diseases from endemic countries due to a lack of control and inspection in the international livestock trade and the well-documented involvement of short- and long-distance winds associated with infected insects. No differences in efficacy were monitored between the two vaccines used for 3 months post-cattle introduction. Better global proactive disease control should be considered to protect animals' welfare and prevent the economic damage stemming from emerging and remerging diseases.