

# Diagnosing and Treating Charlie's Strange Spots

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## Part I – Introducing the Patient

Charlie Xi is a 58-year-old Asian male who is a mechanical engineer at a large telecom company. He has come to your medical office because a week ago he noticed dark colored lesions on his inner thighs, which have increased in number and size. For the last three months he has been feeling weaker and more fatigued than usual; his weight during that period dropped from 170 to 155 pounds. Mr. Xi quit smoking over 20 years ago and is currently a social drinker (one to two drinks with friends). He used to be a heavy drinker (two to three drinks per night), but ten years ago he cut down his alcohol consumption due to a fatty liver diagnosis (>10% fat in liver). Otherwise, he is fairly healthy. He swims for 30 minutes every day during the weekdays and on weekends he goes on two- to three-mile walks with his wife. Charlie's wife is 54 and has rheumatoid arthritis; they have a healthy 28-year-old son. His father died at age 80 from complications due to Alzheimer's disease and his mother died at age 68 from intestinal cancer. He wants to know if his problem will interfere with his upcoming annual summer cruise. For the last five years he has gone on a two- to three-week summer cruise with his wife. He has been to Japan/Taiwan, Scandinavia, Alaska, the Bahamas, and, most recently, Greece/Turkey, in that order, over the last five years.

### Questions

1. What information provided above could help you diagnose what is wrong with Mr. Xi? Organize the information into the following categories:
  - Signs (phenomena that can be detected by someone other than the patient)
  - Symptoms (phenomena experienced by the affected individual)
  - Medical history (personal and family)
  - Any other information
2. Based on the information you have categorized, create a differential diagnosis of the top three to five diseases/disorders that Mr. Xi might have. Rank them in order of likelihood, with one or two sentences justifying the likelihood for each cause.
3. Propose one to three diagnostic tests that could narrow the range of possible causes, with one or two sentences justifying why each test could narrow the range of possible causes.

## Part II – Diagnostic Tests

Mr. Xi's blood was drawn and a standardized blood test was conducted. His hemocrit was 45% (normal range 38.8%–50%) and white-blood cell count was a little low at 2,500 white-blood cells/mL (normal 3,500–10,500). However, his ratio of white-blood cells was normal: neutrophils 65%, lymphocytes 25%, other 10%. A biopsy was taken of a lesion and grown in cell culture. After three days of growth the cells were confirmed as coming from malignant cancerous tissue. A magnetic resonance image (MRI) of the area around the skin lesions on Mr. Xi's inner thigh revealed enlarged lymph nodes, a sign of potential metastasis. DNA sequencing of the lesion biopsy revealed DNA consistent with human herpesvirus 8, also known as Kaposi's sarcoma-associated herpesvirus, leading to the diagnosis of Kaposi's sarcoma.

### *Question*

4. Based on Mr. Xi's diagnosis, come up with three to five treatment options, ranked in order from most to least likely to be effective, with one to three sentences justifying why each treatment would be effective. List potential risks and side effects for each of the treatment options.

## Part III – Treatment

The first thing the medical team did with Mr. Xi was to test him for HIV, as Kaposi's sarcoma patients are often HIV positive. However, Mr. Xi tested negative for HIV. This test was immediately followed by surgery to remove enlarged lymph nodes around the affected skin region, done to prevent potential metastasis of the sarcoma. Next, Mr. Xi was prescribed acute chemotherapy, with treatments every four weeks for three to six months, with liposomal doxorubicin (Doxil®). The treatment was effective, as the lesions started to get smaller immediately after the first treatment. After three months, the lesions completely disappeared and the treatment was discontinued. However, six months after the last treatment, the lesions reappeared. Acute chemotherapy was repeated and was again immediately effective, and the lesions disappeared after three months. This cycle of three-month treatments, remission, and recurrence after five to seven months repeated for five years. After the latest round of acute chemotherapy, preventative chemotherapy of once every ten weeks permanently was prescribed by Mr. Xi's doctors. Since preventative chemotherapy was prescribed, Mr. Xi has been in remission for two years. He is currently a medical research subject at a major research university due to his unique genetic and medical background as a non-Mediterranean Kaposi's sarcoma patient who is HIV negative.

### *Question*

5. What parts of the real-life treatment for Mr. Xi do you agree and disagree with, and why? If you disagree with a particular treatment, what alternatives would you have proposed, and why?