

Possible cause for the death of Alexander

Shrana Rathore

Department of Mechanical, Vishwakarma Institute of Information Technology, Pune (An Autonomous Institute Affiliated to Savitribai Phule Pune University, Kondhwa Bk, Pune, Maharashtra, India)

Abstract

The Alexander who concord almost complete Asia and ruled for short time. During his returning death was occurred and his death was a mystery. Since contemporary sources vary in their accounts of the reason for his death. In this paper the circumstances and postulation for cause of his death are discussed.

Keywords: alexander, hephaestion, roxane, mallians attack, vibrio vulnificus

1. Introduction

Alexander III of Macedon (20/21 July 356 BC – 10/11 June 323 BC), commonly known as Alexander the Great, romanized, was a king of the ancient Greek kingdom of Macedon and a member of the Argead dynasty^[1]. He was born in Pella in 356 BC and succeeded his father Philip II^[2-3] to the throne at the age of 20. He spent most of his ruling years on an unprecedented military campaign through Asia and northeast Africa; and by the age of thirty he had created one of the largest empires of the ancient world, stretching from Greece to northwestern India. He was undefeated in battle and is widely considered one of history's most successful military commanders. Alexander, King of Macedonia, conqueror of the Persian Empire, died in Babylon at sunset on the 10th of June, 323 BC.

He was not yet 33 years old, had been king for 12 years and 8 months and had shown himself to be fully deserving of the title "The Great". Educated by Aristotle, trained in warfare by his father Philip II, he invaded Asia at the age of 22 and defeated Darius III^[4] within 3 years. He never returned to Macedonia but commenced with the establishment of an Asian Empire based on Hellenistic culture^[5] whilst incorporating the best elements of the Persians and other conquered nations. With few exceptions he was remarkably magnanimous towards his former enemies, performing acts of justice far in advance of his time. As Tarn (1948:I.124-125) puts it: This was probably the most important thing about him: he was a great dreamer. To be mystical and intensely practical, to dream greatly and to do greatly, is not given to many men; it is this combination which gives Alexander his place apart in history. The account of Alexander's final illness is then discussed as recorded in the King's Journal and the Liber de morte testamentumque Alexandri Magni^[6,7]. The theory that he was poisoned and another hypothesis is that he drank himself to death are rejected. Since contemporary sources vary in their accounts of the reason for death of Alexander. There is still uncertainty about cause of his death. Thus in this paper, they are briefly reviewed and assessed based on the circumstances, environment and conditions of his health. His final illness and cause of death was postulated based on the symptoms characteristic of malignant tertian malaria (*Plasmodium falciparum*)^[8,9] possibly precipitated by recent wounds, exhaustion and heavy drinking.

2. Possible causes

2.1. Hephaestion

Alexander once told that Hephaestion had loved him for himself. He had a close emotional attachment to his companion, cavalry commander (hipparchus) and childhood friend, Hephaestion^[10]. He studied with Alexander, as did a handful of other children of Macedonian aristocracy, under the tutelage of Aristotle. Hephaestion makes his appearance in history at the point when Alexander reaches Troy. There they made sacrifices at the shrines of the two heroes Achilles and Patroclus; Alexander honoring Achilles, and Hephaestion honoring Patroclus. Alexander and Hephaestion were possible lovers, and their tutor, Aristotle, described their relationship as "one soul abiding two bodies." After Hephaestion's death, Alexander mourned him greatly and did not eat for days. Alexander held an elaborate funeral for Hephaestion at Babylon, and sent a note to the shrine of Ammon, which had previously acknowledged Alexander as a god, asking them to grant Hephaestion divine honours. The priests declined, but did offer him the status of divine hero. Alexander died soon after receiving this letter; Mary Renault suggests that his grief over Hephaestion's death had led him to be careless with his health. No other circumstance shows better the nature and length of their relationship than Alexander's overwhelming grief at Hephaestion's death. As Andrew Chugg says, "it is surely incredible that Alexander's reaction to Hephaestion's death could indicate anything other than the closest relationship imaginable". In the context of the nature of their relationship, one instance stands out as remarkable. Arrian says that Alexander "flung himself on the body of his friend and lay there nearly all day long in tears, and refused to be parted from him until he was dragged away by force by his Companions". He bestowed another daughter of Darius, Drypetis on his friend, Hephaestion, so that their future children might be cousins of his children. Also Hephaestion's death devastated Alexander. In fact, Hephaestion died earlier than Alexander.

2.2. Doctor

When he was sick at Cilicia, Philip was called to treat. Philip was trained by Aristotle^[11] and practiced some medicine himself. Darius had surely heard of his infirmity

through his network of spies and was hastening his plans for attack. Hence Darius wrote a message "Beware of Philip! I have word that Darius has bribed him to poison you." All the Macedonians knew that the great king Darius had offered a huge amount of money who would kill Alexander and Philip was in a better position to finish it. But Philip didn't which defines his faithfulness towards Alexander and Alexander's sharp mind to appoint him. In this case too the suffering indicated malaria or bronchial infection but it was due to the concept of balance in his body. Hence no doctor was in place to kill Alexander.

2.3 Friends

Perdiccas, Ptolemy, Nearchus, Seleucus and dozens of other companions were given brides from the native aristocracy of Persia, Median, Bactria. Alexander was in place who could do anything, though there were his friends who could be in place for rivalry but they were appointed by the great king Alexander who could judge everything keeping utmost their loyal and faithful attitude towards him. Hence all the friends appointed by him were loyal towards him and were in no place to kill him. Also most of his enemies were defeated and killed while others were his friends who cared him and lived for his desires.

2.4. Military

Now coming to his military, it seemed they were satisfied with themselves and why not, after all this they had earned a huge amount which they couldn't in their whole lives. Though his military was frustrated and wanted to return, at first Alexander denied but at last agreed to return their home, Macedonia.

Also, during their journey at Cilicia, when Alexander became sick, all his military was worried about him as who would guide them and too would help in mapping towards home. Hence no soldier was in place to kill Alexander.

2.5. Family

Apart from this, Alexander's mother, Olympia, is not at all in suspicion under his death. In fact right from his childhood she wanted to him to become a great ruler and was proud of him.

Barsine (Stateira 2) was his wife. In 330 BC, Alexander left Stateira and her family in Susa with instructions that she should be taught Greek. Historian Elizabeth Donnelly Carney speculates that Alexander had already decided to marry Stateira and was preparing her for life as his wife. Stateira became Alexander's second wife in 324 BC, almost ten years after her capture, in a mass ceremony known as The Susa weddings which lasted five days. Ninety other Persian noblewomen were married to Macedonian soldiers who were loyal to Alexander; this included Drypetis, who married Alexander's friend, Hephaestion. At the same ceremony, Alexander married Parysatis, daughter of previous Persian ruler Artaxerxes III ^[12]. It was fairly common practice for conquering rulers to marry the widow or daughter of the man they had deposed. By wedding both women, Alexander cemented his ties to both branches of the royal family of the Achaemenid Empire. Hence she did not kill Alexander.

Roxane was too the wife of Alexander ^[13, 14, 15, 16]. She was

too going to give birth to Alexander's son and later his name was Alexander IV. She too could not kill Alexander.

The person who came across his life, named as Craterus, Alexander had once replied that Craterus had loved him as a king. He was a best wisher of Alexander, Craterus received a sister of Alexander's first wife Roxane. So he was a close relative and never thought to make his sister widow.

2.6. Mallians attack

After seeing the whole scene Alexander died at Babylon and that too after he assured his concurrence there and was returning Macedonia. There were no wars as he had already conquered it. Hence no one in Babylon and that too alone was in place to kill Alexander. Suddenly he became unwell. We know that there was a war of Alexander against the Mallians, ^[17] a tribe of independent Indians. During the war they pierced an arrow on his left breast. The arrow passed the thoracic wall and injured the lung. The head of the arrow had wedged in the chest wall, penetrating the intercostal space in front of Alexander's heart. The arrow could not be easily removed. Moreover, it was feared that his ribs would be broken, causing internal hemorrhage. Nevertheless, the removal of the head of the arrow resulted in severe hemorrhage. Although Alexander recovered. Since the war was in India, he became fine when he came back to Babylon returning home.

2.7. Vibrio vulnificus (flesh eating bacteria)

Though he became fine, the wound was deep. And as he was returning, May turned June. It was too a period of drastic climate change. It was often that they put their tents and camps near seashore. Too *Vibrio vulnificus* (flesh eating bacteria) ^[18, 19] are found in brackish water and attack person with open wounds. It is often that climate change lead to rise in flesh eating bacteria. Increasing seasonal temperatures and decreasing coastal salinity levels seem to favor a greater concentration of *Vibrio* within filter-feeding shellfish of the US Atlantic seaboard and the Gulf of Mexico, especially oysters (*Crassostrea virginica*). Scientists have frequently demonstrated the presence of *V. vulnificus* in the gut of oysters and other shellfish and in the intestines of fish that inhabit oyster reefs. The vast majority of people who develop sepsis from *V. vulnificus* became ill after they ate raw oysters; most of these cases have been found in men.

V. vulnificus is an extremely virulent bacterium that can cause three types of infections:

2.7.1 Acute gastroenteritis from eating raw or undercooked shellfish

V. vulnificus causes an infection often incurred after eating seafood, especially raw or undercooked oysters. It does not alter the appearance, taste, or odor of oysters. Symptoms include vomiting, diarrhea, and abdominal pain.

2.7.2. Necrotizing wound infections can occur in injured skin exposed to contaminated marine water

V. vulnificus bacteria can enter the body through open wounds when swimming or wading in infected waters or by puncture wounds from the spines of fishes such as stingrays. People may develop ablistering dermatitis sometimes mistaken for pemphigus or pemphigoid.

2.7.3 Invasive sepsis can occur after eating raw or undercooked shellfish, especially oysters.

V. vulnificus is 80 times more likely to spread into the bloodstream in people with compromised immune systems, especially those with chronic liver disease. When this happens, severe symptoms including blistering skin lesions and septic shock can sometimes lead to death. This severe infection may occur regardless of whether the infection began from contaminated food or an open wound.

Men have been shown to be more at risk from this infection than women, co-morbidities such as alcoholic cirrhosis and diseases affecting the endocrine system (diabetes, rheumatoid arthritis, etc.) put a person far more at risk to develop infection from *V. vulnificus*.

According to the latest reports, Necrotizing fasciitis is a skin infection caused by rare bacteria that enters the body through a break in the skin. From this opening, the bacteria aggressively attacks muscles and other organs resulting in rapid destruction of the tissues. *Vibrio* bacteria are one group that can cause this infection. One type called *Vibrio vulnificus* is particularly dangerous. It is usually contracted when an open wound comes in contact with coastal seawater. Necrotizing fasciitis can quickly develop soon after. If not treated promptly with antibiotics, the infection can become fatal.

3. Conclusion

The three popular theories concerning the cause of Alexander's death – Malaria, typhoid and alcohol poisoning - can now be discounted. Malaria is carried by mosquitoes that live in jungle and tropical locations, but not in desert regions such as central Iraq where Alexander died. Two years earlier, Alexander had been in an area of India where malaria was common. Nevertheless, the disease cannot remain dormant for this period of time without producing symptoms. Alexander's life from the time he was in India is well documented but there is no report whatsoever of a previous illness of this kind. Typhoid is transmitted by food or water contaminated by bacteria which causes epidemics and not just single, individual cases. There is nothing in any of the historical accounts to suggest such outbreak in Babylon at the time Alexander died. The main effect of alcohol poisoning is continual vomiting, but not once do any of the historical sources mention vomiting or even nausea as one of Alexander's symptoms.

Hence the reason behind Alexander's death is that though he recovered after Mallian's attack, the wound was so deep and internal that when he was returning home to Macedonia via Babylon, there had been a drastic climate change which inculcated *Vibrio vulnificus* (flesh eating bacteria) in water. And since Alexander was near the seashore, too wounded very deeply, these bacteria attacked him resulting in pain and fever, a great symptom of Necrotizing fasciitis. The symptoms occur within 24 hours and last about 3 days which is the same case as seen in Alexander. Hence *Vibrio vulnificus* was the possible cause which can be postulated for the death of Alexander.

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5. References

1. Freeman Philip. Alexander the great, 356-323BC, 1st Simon & Schusterhard cover ed., 2011, 1-38.
2. Howatson, M.C. and Harvey, Sir Paul. The Oxford Companion to Classical Literature. Oxford: Oxford University Press, 1989, 339.
3. Max Pohlenz. Freedom in Greek life and thought: the history of an ideal. Springer. 1966, 20.
4. Heckel, Waldemar. The Wars of Alexander the Great. 2002, 24.
5. Green, Peter. Alexander the Great and the Hellenistic Age. London: Orion. 2008, 272.
6. Baynham, E. An Introduction to the Metz Epitome: its Traditions and Value, Antichthon, 1995, 29.
7. Worthington, Ian, Alexander the Great: a reader, 2003, 10.
8. Rich SM, Leendertz FH, *et al.* "The origin of malignant malaria". Proceedings of the National Academy of Sciences. 2009; 106 (35):14902–14907.
9. Perkins DJ, *et al.* "Severe malarial anemia: Innate immunity and pathogenesis". International Journal of Biological Sciences, 2011; 7 (9):1427–1442.
10. Bosworth AB, Baynham Elizabeth. Alexander the Great in Fact and Fiction. Oxford University Press. 2002, 167.
11. Carter JW. Aristotle and the problem of forgiveness. American Catholic Philosophical Quarterly. 2018; 92(1):49-71.
12. Grabbe Lester L. A History of the Jews and Judaism in the Second Temple Period. Continuum International Publishing Group. 2004, 323.
13. Ahmed SZ. Chaghatai: the Fabulous Cities and People of the Silk Road, West Conshokoken: Infinity Publishing, 2004, 61.
14. Carlos Ramirez-Faria. Concise Encyclopedia of World History, New Delhi: Atlantic Publishers & Distributors, 2007, 450.
15. Ahmed, SZ. Chaghatai: the Fabulous Cities and People of the Silk Road, West Conshokoken: Infinity Publishing, 2004, 61.
16. Edward Strachan, Bolton Roy. Russia and Europe in the Nineteenth Century, London: Sphinx Fine Art, 2008, 87.
17. Dodge Theodore. Alexander. New York: Da Capo Press, 1890, 592–608.
18. Oliver JD, Kaper J. *Vibrio* species. In: Food Microbiology: Fundamentals and Frontiers. (Doyle MP *et al.*, editors) (2nd ed.). ASM Press. 2001, 263-300.
19. Oliver JD. "Wound infections caused by *Vibrio vulnificus* and other marine bacteria". Epidemiol Infect. 2005; 133 (3):383–91.