

Alexander the Great (356-323 BC) and His Injury in Kyropolis Reconsidered

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ABSTRACT

Purpose: To reconsider Alexander the Great's injury in Kyropolis.

Methods: Historical sources were compared with modern neurosurgery.

Results: Earlier interpretations were focused on the transient blindness Alexander the Great presented after the injury, but according to our point of view we should rather focus on his dysarthria which lasted almost two months.

Conclusion: We propose the hypothesis that Alexander the Great developed a posttraumatic delayed cerebellar syndrome after the injury.

Keywords: Alexander the Great, Kyropolis, neck, occipital area, transient cortical blindness syndrome, posttraumatic delayed cerebellar syndrome.

INTRODUCTION

Alexander the Great (356-323 BC) was a fearless soldier who fought all time in the front line. As we learn by the historian Flavius Arrianus (95-180AD), Alexander the Great's whole body was full of scars provoked by every weapon used

at his time, which made him feel very proud as he strongly believed they were signs of his bravery (Flavius Arrianus Hist. et Phil. Alexandri anabasis 7.10.1.4- 7.10.3.3) (1). During his campaign in Asia (2) he suffered nine severe injuries. Among them, we can distinguish the one during

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FIGURE 1. Alexander the Great (356-323 BC) fighting Darius III (380-330 BC) in the Battle of Issus 333 BC. Alexander Mosaic of Pompeii (Naples National Archaeological Museum, Italy)

the siege of Kyropolis, in 329 BC, which has a particular neurosurgical interest.

HISTORICAL SOURCES

In 329 BC, Alexander the Great suffered a serious injury during the siege of Kyropolis (3). Ancient historians report that he has been hit by a stone in the neck and/or probably in the head, possibly in the occipital area, which was likely to have been fired by a crossbow. The blow was strong enough, so its side effects were treated for a period of about two months.

The historian Flavius Arrianus reported that Alexander the Great had been hit in the neck and head (Flavius Arrianus *Hist. et Phil. Alexandri anabasis* 3.3.4-9) (1). Quintus Curtius Rufus (first century AD) wrote that Alexander the Great first lost his light after the hit and then went unconscious for a while. When he regained all his sensations, he continued to fight despite being clearly weakened and having difficulty in speaking, which lasted for a long time. Also, the same historian reported that his health problems caused by that injury were obvious in subsequent battles. Specifically, Alexander the Great was weak, could not ride and felt intense pain in the area of the hit. But the most important problem he faced was the difficulty in speaking: his voice was unsteady, he made frequent pauses and his speech could not easily be perceived by others. His speech impairment seemed to have continued for about two months, according to modern historians and based on chronological

calculations of battles that followed this event. Meanwhile, until Alexander the Great recovered completely, he spoke loudly, beyond the difficulty in articulating speech, as the historian pointed out, fearing that his steady voice would cause a breakdown of the wound that probably healed very slowly. Indeed, according to Quintus Curtius Rufus, this way of his speech as well as his difficulty in speaking provoked fear among his generals who participated in the council to prepare the attack against the Scythians, so they discouraged him from that war mission (Quintus Curtius Rufus. *The History of Alexander VIII*, vi 21-23, vol. II, pp. 184-185) (4).

On the other hand, Plutarch (c. 46-c. 120 AD) did not mention the problem of speech in his narration. Nevertheless, he wrote about his periodic blindness, which lasted for a few days, also pointing that the hit was found in the neck (Plutarchus *Biog. et Phil. Alexander* 45.5.3-45.6.5) (5). □

DISCUSSION

Modern scholars were troubled with this injury; so, many diagnostic interpretations of the specific pathology in which Alexander the Great was found were suggested. As early as 1928, Samothrakis had expressed the idea that this injury was merely a bruising of the optic nerve, which should have fled quickly (6). Bertolotti argued that the blindness was an outcome of a fracture at the base of the skull in the anterior cranial fossa, which provoked bleeding in the subarachnoid and subdural space, resulting in the atrophy of the optic nerve sheaths due to bilateral hematoma resulting from the above-mentioned hematoma since the above spaces communicate. This scholar also expressed the idea that the optic nerves were affected by antitype due to the hit in the cervix and the occipital region, either directly or indirectly, because fractures in the orbits should have coexisted. He even added the hypothesis that a fracture could occur in the frontal bone due to the barking of the helmet on the posterior side, which could also cause the head to strike on the inner side of it because it was metallic (7). Esser proposed bilateral bleeding into the vitreous body (8).

Forrest has first proposed the theory of periodic blindness due to the trauma (9). This theory was presented in a more complete way by

Laskaratos, who added to the clinical image the speech problem, which was not taken into consideration by Forrest. Laskaratos expressed the idea that Alexander the Great suffered by the transient cortical blindness syndrome paralleling his symptomatology, as described by ancient historians with analogous incidents found in the modern medical literature (10). □

CONCLUSION

According to our point of view, the clinical image of Alexander the Great after the injury described by historians (vertigo, blurred vision for a few minutes or maximum few days, ataxia and dysarthria for about two months) corresponds to a hit in the neck and the occipital area, which could have also provoked a fracture on the occipital bone, which in turn had caused a delayed injury of the cerebellum presented with dysarthria for nearly two months. Therefore, we propose the hypothesis that Alexander the Great developed posttraumatic delayed cerebellar syndrome after the injury (11), because his symp-

toms were better matching the clinical image of this syndrome rather than the transient cortical blindness syndrome as proposed before, since dysarthria, and not the blindness, was the main symptom, which lasted for a very short time.

The other approaches are not in compliance with the clinical image. Samothrakis' idea does not fit the clinical image of Alexander the Great. Bertolotti's view also does not correspond to the clinical image because a fracture in the base of the skull would have provoked raccoon eyes and otorrhoea, which were not mentioned in the historical texts. In addition, if Alexander the Great had had a frontal bone fracture due to the barking of the helmet on the posterior side, he would have fallen into a coma. On the other hand, if Alexander the Great had bilateral bleeding into the vitreous body, as Esser proposed, blindness would have lasted more. □

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