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Hematological theology and the limits of retrospective diagnosis: a critique of the hemophilia hypothesis in Exodus 4:24–26. Comment on: "'Bridegroom of blood' - a biblical reference to hemophilia?"

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In a recent publication, Kosowsky¹ argues that the earliest historical record of hemophilia may be the account of Zipporah's son bleeding after circumcision in Exodus 4:24-26. This critical observation of a ritual-caused hemorrhage offers an entry point into what we term hematological theology: the retrospective application of clinical hematological frameworks to ancient sacred texts. Yet it fails to employ a diligent differential diagnosis. We argue that the X-linked coagulopathy necessary for a hemophilia diagnosis is textually contradicted and clinically speculative; solid textual and clinical evidence are necessary to make a retrospective diagnosis. This comment aims to demonstrate that the son's survival, presence of a previously unaccounted for maternal uncle, and lack of documented X-linked familial bleeding patterns support a classification of an undifferentiated bleeding disorder explained by autosomal inheritance or a singular bleeding incident, rather than hemophilia. Postulating the specific diagnosis of hemophilia is an example of a diagnostic overreach in hematological theology and is inferentially flawed.

In making his case, Kosowsky¹ notes a "conspicuous absence" of male offspring among Jethro's seven daughters, asserting an X-linked hemophilia variant is the cause. Numbers 10:29 and Judges 4:11 introduce Hobab. Though occasionally debated, most agree Hobab is the son of Reuel (Jethro) –Zipporah's brother. He is a surviving male relative with no reported bleeding issues– directly contradicting this claim.² Furthermore, attributing a skewed sex ratio to a variant causing hemophilia, without evidence of male deaths, ignores stochastic variation. A family of seven daughters does not dictate a genetic "culprit." In population studies, this is a statistical probability ($p=0.0078$).³

Kosowsky also posits that the disappearance of Zipporah's sons from later biblical accounts reinforces a hemophilia claim.¹ This assertion also lacks substantiation. There are multiple accounts of children in the Hebrew Bible (Tanakh) mentioned briefly, then not referenced further. Genesis 5:4 is a singular mention that Adam had additional unnamed sons and daughters. The daughters of Zelophehad were only mentioned five times in the book of Numbers in relation to inheritance laws, and the sons and daughters of Job have their presence established and are not heard of again. The subsequent lack of reference to Zipporah's sons appears to follow a common biblical pattern that highlights influential characters, as opposed to implying a fatal X-linked coagulopathy.

The singular bleeding event in Exodus stands in stark contrast to the Talmudic reference in Yevamot 64b, which establishes the recurrence and heredity required to draw a hemophilia conclusion.⁴ The Tanakh fails to document hemorrhagic episodes in any additional male relatives that, combined with the survival of the maternal uncle “Hobab,” make it unlikely to predate the Talmudic hemophilia reference. For an X-linked retrospective diagnosis based on an ancient sacred text to be suggested, there must be more distinct evidence.

We contend that the Babylonian Talmud remains the first definitive hemophilia reference due to the clear recurrence and hereditary pattern it establishes. The accounts in the Talmud articulate that if a woman has three sons who perish after circumcision, she is not to circumcise the fourth son. It further teaches that if three sisters each have a son who dies after circumcision, the fourth sister is also instructed not to circumcise her son.⁴ This represents classic hemophilia inheritance patterns affecting multiple male siblings and cousins in a familial pedigree.

The Talmud demonstrates that X-linked inheritance patterns were recognized by ancient rabbis and meet the criteria to retrospectively establish a hemophilia diagnosis.^{5,6} Exodus lacks this evidence, making the account a noteworthy “bleeding event” where differential diagnosis must be explored.

Understanding a hemophilia diagnosis is unlikely, we seek to explain the hemorrhagic incident. Supposing Zipporah’s son had a bleeding disorder, an autosomal condition, such as von Willebrand disease (VWD) would be more likely. As the most common inherited bleeding disorder, VWD is thought to impact up to one percent of the total population, carrying a significantly higher epidemiological probability than hemophilia.⁷ Specifically, VWD type 1, considered autosomal dominant, is a primarily milder form of the disease and could account for a bleeding phenotype where Zipporah’s child survived the post-circumcision hemorrhage.⁷ One study analyzing bleeding episodes of children under 2 with VWD found 12% resulted from circumcision.⁸

While VWD is the most logical inherited bleeding disorder hypothesis, it’s worth noting there are numerous bleeding disorders with mild clinical phenotypes seemingly more probable than a hemophilia diagnosis in the absence of a proven matrilineal inheritance pattern.⁹ These

additional possibilities include, but are not limited to, factor deficiencies other than factor VIII (hemophilia A) and factor IX (hemophilia B), and platelet disorders.

If there were an underlying bleeding disorder, VWD would be a more likely culprit than hemophilia, yet VWD remains highly speculative given the surgical context. The most likely explanation for the post-circumcision hemorrhage is clear when referencing the original text:

‘At a night encampment on the way, GOD encountered him and sought to kill him. So Zipporah took a flint and cut off her son’s foreskin, and touched his legs with it, saying, “You are truly a bridegroom of blood to me!” And when [God] let him alone, she added, “A bridegroom of blood because of the circumcision.”’ Exodus 4:24-26²

Kosowsky emphasizes this is an emotionally laden scenario: “Exodus 4:25–26 is an enigmatic passage, set during the Israelite bondage in Egypt, in which Zipporah, the wife of Moses, is found circumcising her son, seemingly under duress.”¹ While God is threatening to end her husband’s life, Zipporah, a non-professional, is forced to perform an urgent circumcision with a stone blade. In this scenario, the most plausible explanation for the post-circumcision hemorrhage is a surgical misstep. Zipporah likely caused a significant injury, such as a nicked frenular artery or excessive tissue removal.¹⁰ This ultimately reframes “bridegroom of blood” as a singular unfortunate hemorrhagic incident.

A rigorous hematological theology must demand both clinical evidence and textual support before arriving at a specific diagnosis. Zipporah’s son’s suffering remains the first accounting of a pediatric hematological event, which is significant. Retrospectively proposing he has hemophilia, in the absence of both criteria, is a diagnostic leap.

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