

Leah's Eyes: A Contribution to her Children

Bracha Einzig

“Lavan had two daughters. The older one's name was Leah and the younger one's name was Rachel. Leah's eyes were רכות, while Rachel had beautiful features and a beautiful complexion” (Bereshis 29:16-17). The word רכות has various translations according to different commentaries; some are positive aspects about her eyes, while others are negative. In his commentary on the Torah, Rav Chaim Ibn Attar notes that the juxtaposition of Leah's eyes with a description of Rachel's beauty shows that the word רכות is not of a positive nature; rather, it shows that Leah was not beautiful because of her eyes. Rashi has a different interpretation: He translates רכות as “tender” because Leah was crying all the time. Rashi notes that Leah was always weepy because she thought she was destined to marry the evil Esav. She saw the parallel between Rivkah's twin sons and Rachel and herself, in which the older son (i.e., Esav) would marry the older daughter (i.e., Leah), while the younger son (i.e., Yaakov) would marry the younger daughter (i.e., Rachel). Leah could not bear to witness this fate that seemed to be bestowed upon her and therefore cried constantly to G-d in order to change it. Rashi's commentary is seen as more positive in nature; although her eyes were tender, it was because of her constant connection to G-d through prayer.

The largely controversial Ben Efraim on this passage presents an entirely different approach, suggesting that the letter א should be added to the word רכות to make the word ארכות, meaning lengthened. The word ארכות implies that Leah's eyes were long or large. Seelenfreund and Schneirder proposed that the description of long and large eyes could be medically interpreted as myopia (nearsightedness) [1]. Nearsightedness occurs when the eyeball is too long or the cornea, the clear front cover of the eye, has a larger curvature than normal [2].

The difference in the sisters' eyes not only had to do with beauty but also may have contributed to their different roles. From the text, it is apparent that Leah and Rachel had different responsibilities: Leah was found in the tents, while Rachel was a shepherdess. It can be inferred that the difference in the tasks that each daughter was given paralleled the difference in their eyes. Leah stayed around the house due to her sight “disability,” while Rachel, being able to see far distances, was able to tend to her father's flocks [1]. Whether or not the word ארכות implies myopia, the Talmud (Bava Basra 123a), quoting Rabbi Eliezer, states that the verse from the Ben Efraim means that Leah's ultimate legacy for her descendants were ארכות, large rewards. It is possible that not only did the descendants of Leah merit larger rewards, but they also inherited her larger eyes.

Myopia is an eye condition in which light enters the eye and focuses in front of the retina, as opposed to on it. This occurs when the eyeball is too long or the cornea has excessive curvature. This causes distant images to be out of focus, while close objects are clearly seen. Myopia is a very common eye abnormality, and it is

estimated that nearly 30% of all United States residents are affected by it [2]. Based on several studies, Ashkenazi Jews seem to have a higher rate of myopia than other ethnic groups, yet the frequency of myopia for the group has not yet been defined. The data indicating that Ashkenazi Jews have a higher predisposition towards myopia is substantial enough for researchers to use Ashkenazi Jews to trace the chromosomal location of myopia in genome-wide analyses [3-5].

In a 2011 study of 44 large Ashkenazi families, linkage of myopia to chromosome 11 and 22 was noted. Identification of myopia to a specific region on chromosome 11 (11p14-q14) is significant because it overlaps with MYP7, a locus, previously reported in a population of United Kingdom twins, that contains the known eye gene, paired box gene 6 (PAX6). This evidence contributes to the theory that Ashkenazi Jews are substantially more predisposed to myopia than other ethnic groups [5].

Not only do Ashkenazi Jews inherit the gene for myopia, they also have an environmental aspect that lends to an increased rate of occurrence. Zylbermann et al. researched the study habits of Jewish teenagers enrolled in secular and in religious school. Their study focused solely on the Jewish population so that the influence of the genetics involved would be minimized. In Israel, the secular schooling system and the religious schooling system have very different curricula and therefore were compared. The secular system is a 6-hour coeducational program with equal time given to near-vision work as well as listening, with daily homework not exceeding three hours. The religious system is drastically different; boys and girls attend different schools with different curricula. The religious teenage girls have a curriculum very similar to the secular schools, 6 hours of learning as well as 2-3 hours of activities that require near vision, such as sewing or drawing. The religious teenage boys have a significantly different schedule; they learn in school for 16 hours a day. Their learning is focused on the Talmud, which largely consists of the close study of text with print of various sizes positioned side by side. For these boys, learning is also accompanied by back-and-forth rocking of the torso to aid in concentration [6].

The study showed that male and female Jews in secular schools in Jerusalem had a similar rate of myopia, which, in turn, was very similar to that reported for the United States. Their findings were not statistically significant in determining whether a genetic component for myopia occurred with Ashkenazi Jews, since the sampling was taken from Jews of various backgrounds. For the religious teenage boys, the prevalence of myopia was 81%, which contrasted sharply with the 27% in secular school teenagers in Jerusalem. This also presented a considerable variance from the religious teenage girls who have a 36% rate of myopia. The higher rate of myopia for religious teenage boys was correlated to their study habits and school curricula, consisting of sustained near

vision, frequent changes in accommodation due to the swaying study habit, the need for accurate accommodation when reading small print, and the variety of print size, all tending to heavy accommodative eye usage. This study concluded that sustained near vision leads to myopia.

Although no frequency is officially documented, it seems that

Ashkenazi Jews have a genetic predisposition for myopia with defects located on chromosome 11 and 22. In addition, the environmental aspect of studying Talmud for prolonged periods of time contributes to the frequency of this disease. Whether myopia is brought on by genetic and/or environmental factors, it seems that many Jews have inherited their matriarch Leah's nearsightedness as well as her ability to make sure she lived up to her potential.

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