



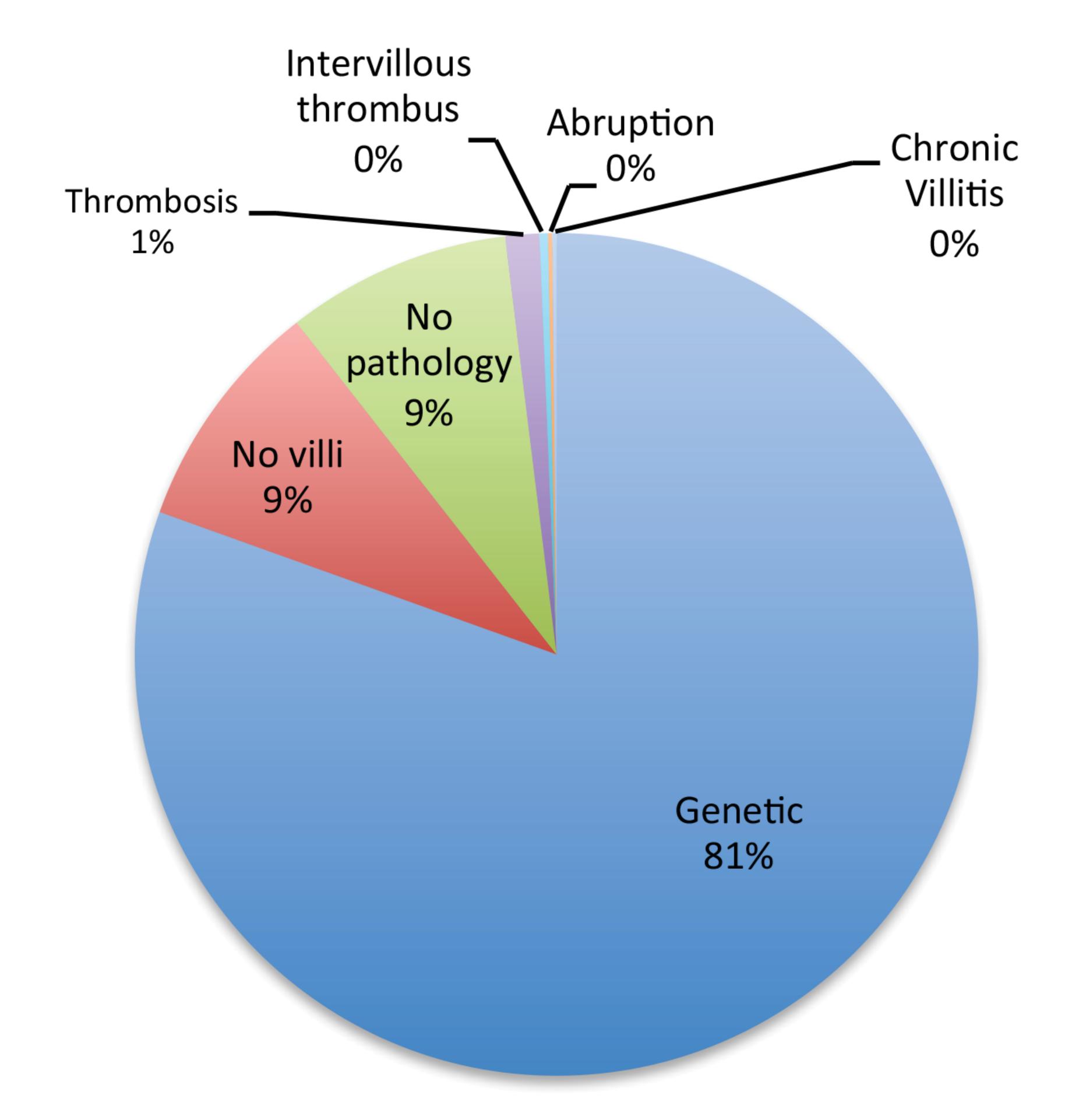
THE MAJORITY OF MISCARRIAGES ARE CAUSED BY GENETIC ABNORMALITIES

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Objective: Miscarriages are often attributed to immunologic, thrombotic or anti-phospolipid syndrome abnormalities, but these etiologies are rarely validated with pathologic examination. The genetic basis for <20 week losses are often proposed, but again, not often validated. We now know that abnormalities in placental growth resulting in dysmorphic trophoblast invaginations and inclusions (TIs) are markers of genetic abnormalities. Therefore, in addition to the standard pathologic examination, we also evaluated a series of miscarriages for TIs.

Design: Pregnancy loss tissue specimens, blocks or slides were sent to a tertiary care center for pregnancy and recurrent pregnancy loss evaluation.

Materials and Methods: Over 10 years 615 losses between 7 and 20 weeks gestation were microscopically examined after formalin fixation, histologic sectioning, and standard hematoxylin and eosin staining. Features identified included: maternal and fetal inflammatory response, abruption, dysmorphic features (trophoblast invaginations and inclusions— both markers of genetic abnormalities), chronic villitis, and thrombi.



Results: From the most to least common we found the following primary diagnoses: 495 cases (80.5%) with TIs; 55 cases (8.9%) without chorionic villi; 53 cases (8.6%) without pathologic abnormality; 10 cases (1.6%) with thrombosis; 1 case (0.2%) with abruption; and 1 case (0.2%) with chronic villitis.

Conclusions: The finding that the majority (over 80%) of these losses appear to be caused by genetic abnormalities— and not the more often cited thrombophilias, immunologic and anti-phospolipid syndromes—suggests that more attention should be paid to genetic causes for pregnancy losses and less attention and expensive testing for the very rare causes. In addition, this study validates the importance of pathologic examination of all pregnancy losses.