affect the increase in ABI. Thus, further studies are needed to clarify whether ABI, arterial stiffness, and central hemodynamics individually predicts future cardiovascular events.

6-3.

Longitudinal Association of Arterial Stiffness and Pressure Wave Reflection with Decline of the Cardiac Systolic Performance in Healthy Men

（大学院博士課程 2 年循環器内科学）
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【Aims】 This prospective observational study was conducted to examine the individual longitudinal associations of the increases in the arterial stiffness and pressure wave reflection with the decline in the cardiac systolic performance during the study period in healthy middle-aged Japanese men.

【Methods】 In 4016 middle-aged Japanese healthy men (43 ± 9 years), the brachial-ankle pulse wave velocity (baPWV), radial augmentation index (rAI) and pre-ejection period/ejection time (PEP/ET) were measured annually during a 9-year study period.

【Results】 The baPWV, rAI and PEP/ET showed steady annual increases during the study period. According to the results of multivariate linear regression analyses, both the baPWV and rAI measured at the baseline showed significant independent associations with the PEP/ET measured at the baseline (baPWV: $\beta = 0.17$, $p < 0.01$ and rAI: $\beta = 0.11$, $p < 0.01$), whereas neither showed any association with the PEP/ET measured at the end of the study period. The results of the mixed model linear regression analysis of the repeated-measures data collected over the 9-year study period revealed that the baPWV, but not the rAI, showed a significant longitudinal association with the PEP/ET (estimate = 0.69×10^{-4}, $p < 0.01$).

【Conclusion】 In apparently healthy middle-aged Japanese men, the annual increase of the arterial stiffness, rather than the annual increase of the pressure wave reflection, appears to be more closely associated with the annual decline of the cardiac systolic performance as assessed by the systolic time interval.

6-4.

Dispersion of aerosols generated during dental therapy

（社会人大学院博士課程 3 年歯科口腔外科・矯正歯科）
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【Background】 The novel coronavirus pandemic has created an urgent need to study the risk of infection from aerosols that are generated during dental care and to conduct a review of infection controls. However, there are almost no reports on the dynamics of aerosols that are produced when high-speed rotating tools are used in dentistry.

【Methods】 In a large cleanroom, laser light and a high-sensitivity camera, along with particle counters, were used to investigate the dynamics of aerosols that are generated when microengines are used.

【Results】 The aerosols tended to be scattered upwards immediately after they were generated and then were gradually dispersed into the surroundings. A few particles that are larger than 5 μm were generated, and nearly all the particles were less than 5 μm in size. There was a wide distribution of the particles over the long term.

【Conclusions】 The possibility that aerosols produced in dental care float far and for a long time in dental clinics before they fall was evaluated. As a result, it was found that patients and dental healthcare professionals are constantly being exposed to aerosols. Although complete prevention of exposure to aerosols that are generated in dental therapy is difficult, our results underscore the importance of ventilation as well as compliance with standard precautions to prevent contact

infections.

6-5.
核膜病における骨格筋の核形態異常と筋変性の関係

（病態生理学分野）
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核膜構成タンパク質の遺伝子異常によって起こる核膜病は、多様な疾患を呈する。中でもエメリン欠損や A 型ラミンの遺伝子異常によって起こるエメリー・ドレイフス型筋ジストロフィー（EDMD）は骨格筋や心筋が障害される。核膜が核の構造や形態維持に重要な役割を果たすことが示唆されているが、病態への具体的な関与についてはよく解かっていない。我々は 3 種類の EDMD モデルマウス骨格筋の核形態と症状を比較検討することで、核の形態変化がどのように筋病態に寄与するかを検討した。

その結果、筋障害を示さないエメリン欠損マウス（Emd）は、核形態も比較的正常に保たれていたが、ごく軽度の筋障害を示す A 型ラミン変異マウス（H222P）では、筋核の形態に明らかな異常が認められた。また Emd と H222P の二重変異マウス（EH）は、若齢から筋障害を示すが、筋核の形態異常は H222P マウスと同程度であった。そこで、核形態の維持が筋症状に寄与するかを検討するため、EH マウスの骨格筋に蛇毒であるカルジオトキシンを投与した筋再生モデルを用いて、筋再生後の筋変化と筋核の形態変化を経時的に確認した。その結果、筋再生 6 週間後の EH マウスの筋病理や筋機能は有意に回復し、筋核形態も比較的正常に保たれていた。しかし、投与 18 週間後では筋核形態は継続して保たれていたものの、筋症状は明らかに悪化した。これまで核膜病において核形態異常が病態に直接的に関与していると唱えられてきたが、本研究結果から、骨格筋の核形態異常は筋変性への直接的関与は低いことが明らかとなった。

6-6.
The expressions of steroid hormone-relating factors in the rete ovarii of adult mice

（医学部医学科 3 年）
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【Introduction】 The rete ovarii and epoöphoron are homologous structures of the rete testis and epididymis in males and are derived from the developing rete cells and mesonephric tubules, respectively. Because the rete ovarii and epoöphoron were thought to be just a remnant, their function remains unclear throughout life. In this study, we examined the expression of steroid hormone-relating factors in the rete ovarii and epoöphoron at the pubertal period.

【Materials and methods】 Ovaries collected from adult C57BL/6J mice at 13 weeks old were fixed, and the serial paraffin sections were prepared. Pax2（a marker of mesonephric tubules）, 3bHSD（a marker of steroidogenic cells）, and receptors for androgen（AR）, estrogen（ESR1）, and progesterone（PGR）were detected by immunohistochemistry.

【Results】 The rete ovarii with a lumen were observed inside and outside of the ovary at the ovarian hilus, and the epoöphoron were observed in adipose tissue near the ovarian hilus. AR and ESR1 were positive in the epoöphoron and the small portion of the distal rete ovarii, and Pax2 was also positive there. PGR and 3bHSD were neither expressed in the rete ovarii nor epoöphoron.

【Discussion】 This study suggests that the rete ovarii and epoöphoron are incapable of producing steroid hormones, such as androgen, estrogen, and progesterone. The rete ovarii is mainly derived from the rete cells, but the distal portion probably originates from the mesonephric tubules and possesses sensitivity to androgen and estrogen.