

汉英对照

(Chinese-English)

心电图

教学图谱

Electrocardiograms for Education

主编 张娟赢

Compiler-in-Chief Zhang Juanying

上海科学技术出版社

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内 容 提 要

本书采用汉英对照的形式,不仅详细描述了正常和异常心电图的诊断标准,而且编入典型和一些疑难心电图的图例,并对其特征加以简明扼要的说明,重点突出,完全可以满足医学院校各学制教学的需求,也可为临床医生,尤其是内科医生所参考。

前 言

心电图是诊断心血管疾病不可缺少的一项检查,它在临床上被广泛应用,为此要求医学生乃至临床医生(特别是内科医生)必须掌握心电学基本知识,必须具有阅读心电图和诊断心电图的能力。为使医学生更好、更快地学好和掌握它,亦为使临床医生温故而知新,特此编写本书。本书不仅详细描述了正常和异常心电图的诊断标准,而且编入了我们数十年来在临床工作中所积累的典型和一些较疑难的心电图,并对其特征加以说明。为便于心律失常心电图的诊断和分析,本书结合图谱对心室内差异传导和隐匿传导等心律失常中常见现象进行了阐述。

为适应英语班教学的需要,特请陈良友医师将本图谱翻译成英语,并由丁怀翌教授审定。

在心电图收集和整理过程中,陈菊芳老师做了大量工作,刘霞主任应用电脑对心电图进行修饰,使图更加清晰,并对英文进行校修,特在此表示衷心感谢。

张娟赢

2007 年 1 月

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1. 正常心电图

心脏机械收缩之前,必先产生心肌激动(兴奋),由此产生微小电流,人体组织和体液是一导体,故能将心肌激动时所产生的微小电流传导到身体各部。若在体表任何两点(如左、右臂)按上电极,并用导线连接心电图机,就能记录心肌激动时电位变化,即心电图。心脏激动一次,在心电图机上描记出一组波形,包括 P 波、QRS 波、T 波、U 波、P-R 段、S-T 段、P-R 间期和 Q-T 间期。

1.1 P 波 大部分导联呈圆钝形,有时可有轻度切凹。正常心电图为窦性心律,因此 P 波在Ⅱ导

1. The Normal Eletrocardiograms

The excitations preceding heart's mechanical contraction produce tiny electrical currents which can spread through the entire body because human tissue and body fluid are conductors of electricity. By applying electrodes to any two different positions on the body (e. g. left and right arms) and connecting these electrodes to an electrocardiographic apparatus, the potential change of myocardial excitation is recorded, that is electrocardiogram (ECG). A group of electrocardiographic waves and segments are recorded when the heart excitation, including P wave, QRS complex, T wave, U wave, P-R segment, S-T segment, P-R interval and Q-T interval.

1.1 P wave Most of leads have rounded P waves which may be slightly notched sometimes. Sinus rhythm is normal ECG characteristics, the P wave is upright in

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联直立,在 aVR 导联倒置。时间不超过 0.11 s。振幅,肢体导联不超过 0.25 mV,胸导联不超过 0.2 mV。P 波较小时在临床上无重要意义。

1.2 P-R 间期 代表心房开始除极至心室开始除极前的时间。成年人 P-R 间期在 0.12 ~ 0.20 s。老年人心率缓慢(<60 次/min)时, P-R 间期可达 0.21 s。

1.3 QRS 波 窦房结发出冲动在激动心房的同时通过结间束传导至房室结、房室束、左和右束支及浦肯野纤维到达心内膜下心肌。激动由内膜向外膜传递,使左、右心室除极产生 QRS 波群。

1.3.1 QRS 波命名 各导联所记录的心电图 QRS 波形态是不

lead II and inverted in lead aVR with its duration less than 0.11s. The amplitude of P wave is less than 0.25mV in limb leads, and less than 0.2mV in chest leads. Low P wave is without.

1.2 P-R interval It represents the time from the onset of atrial depolarization to the beginning of ventricular depolarization. The normal P-R interval is in the range of 0.12 - 0.20s in adults. The old people with slower heart rate(less than 60 beats per min) may have slightly longer P-R interval of 0.21s.

1.3 QRS complex The impulse caused by the sinoatrial node activates the atria, at the same time, it conducts to the atrioventricular node via internodal tracts, then the AV bundle, the right and left bundles, the Purkinje fibers, and reaches the ventricular myocardium beneath the endocardium. The excitation of myocardium spreads from the endocardium to epicardium, and depolarizes the left and right ventricles and evolves recorded

相同的,其可为单相波(呈 R 型),或双相波(Qr、Rs 型),或三相波(qRs 型)等。QRS 命名时根据振幅的大小,分别以大小写英文字母表示。以等电位线为基准,等电位线以上的波均称 R(r)波,即第一向上的波为 R(r)波;R 波之前向下的波称 Q(q)波,R 波之后向下的波称 S(s)波。若 QRS 波整个波均向下,称 QS 波。

1.3.2 QRS 波时间、形态和振幅

(1) QRS 波时间 成年人 0.06 ~ 0.10 s。

(2) QRS 波形态和振幅

1) 肢体导联(标准 I、II、III 导联;加压单极肢体导联 aVR、aVL、aVF) 肢体导联的 QRS 波

as QRS complex.

1.3.1 Description of the QRS complex The patterns of QRS complexes varies in different leads, such as monophasic wave(R pattern), diphasic wave(Qr or Rs pattern), and triphasic wave(qRs pattern). Description of QRS complex, the deflections of the QRS are denoted in capital or small letter according to their amplitudes. Based on isoelectric line, the deflection above it, namely the first upright deflection, is termed R(r) wave; the negative deflection preceding R wave is Q(q) wave, while the negative deflection following R wave is S(s) wave. If the entire QRS complex is negative, it is known as QS complex.

1.3.2 Duration, morphology and amplitude of the QRS complex

(1) Duration of the QRS complex It is 0.06 - 0.10s in adults.

(2) Morphology and amplitude of the QRS complex

1) Limb leads (standard leads I, II, III; augmen-

形态多变。它受额面向量图 QRS 环体形态、方位及运转方向的影响。当额面 QRS 环横置时, aVL 导联的 QRS 波呈 qR 型, R 波振幅不超过 1.2 mV, q 波振幅可超过同导联 R 波 1/4; aVF 导联呈 rS 型; 此时 I 导联亦呈 qR 型而 III 导联呈 rS 型, 平均心电轴左偏。当 QRS 环垂直于标准 I 导联时, aVF 导联 QRS 波呈 qR 型, R 波振幅不超过 2.0 mV, q 波深度不应超过同导联 R 波振幅的 1/4; I 导联 QRS 波呈 rS 型, III 导联呈 qR 型, 平均心电轴右偏; 而 aVR 导联 QRS 波群呈 Qr、rS 或 rSr 型。aVR 导联 r 波振幅 ≤ 0.5 mV, r/q 之比 < 1 。

ted unipolar limb leads aVR, aVL, aVF) The QRS complex patterns are variable in the limb leads. They are influenced by the configuration, orientation and moving direction of the frontal plane QRS loop vector. When the frontal plane QRS loop vector is horizontally orientated, the ECG can be characterized by the QRS complex of qR pattern in lead aVL with R wave less than 1.2mV and q wave more than 1/4 R wave in the same lead, the QRS complex of rS pattern in leads aVF, III, the QRS complex of qR pattern in lead I, and left axis deviation; when the QRS loop is perpendicular to standard lead I, the ECG is manifested as qR pattern in lead aVF with R wave not more than 2.0mV and q wave not more than 1/4 R wave in the same lead, rS pattern in lead I, qR pattern in lead III, Qr, rS or rSr pattern in lead aVR, and right axis deviation. The amplitude of the r wave in lead aVR is not more than 0.5mV, and the ratio of r/q is less than 1.