の生活についての情報を収集し，看護診断には Carnevali と Thomas (1993)による方法を用いられた．総合的臨床評価は看護スタッフの感情と看護・患者関係，患者が置かれている現在の状況についての解釈を中心に話し合われた．介入群では自室から離れたり，スタッフの注意を引こうとする患者は減少し，非介入群では協力して作業する能力は減少し周囲への攻撃的言動は増加した．また群間の比較では，非介入群で悲しがる様子が有意に増加し（$p＝0.030$），協力して作業する能力が減少した（$p＝0.040$）．

こうした多種間で，または看護においてアセスメントを加え，カンファレンスを行うことはさまざまなケアの工夫を生み出す素地になっている．たとえば Camberg らは，認知症性高齢患者に関する嗜好や生活歴などの情報を集め，高齢患者が最も好む5つの記憶に関するオーディオテープを個別に作り，これを聞かせることによって認知症性高齢患者の幸福感を向上し，BPSDが改善したことを報告している[7]．

おわりに

高齢者ケアのアセスメントとプランの重要性について，現状と課題について概説した．さらに，高齢者のアセスメントおよびケアプランに関する文献をレビューしたところ，いくらかの報告でアセスメントおよびケアプランが臨床的な効果をあげていることが確認された．しかし，これらのツールに関する実証的研究はまだ少な

く，今後の報告が切望されている．

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回想法による BPSD への影響

えんどうひでとし
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はじめに

認知症に対する回想法の効果は一般には知られているが、エビデンスレベルとしては現在のところいまだ十分でないとされている。本項ではこれらの回想法の現状を理解して、認知症の進展予防、認知症の非薬物療法について総括する。認知症の非薬物療法として、音楽療法、現実見当識訓練、動物介在療法、人形療法や化粧療法などさまざまな取り組みがある。しかし、少なくとも非薬物療法の原則は楽しくあり、継続ができることである。いわゆる脳への快刺激となるものがよいと考えられる。

認知症のBPSD（周辺症状）

認知症のBPSDとは図に示したように、記憶障害や見当識障害に基づく不安や混乱から生じるさまざまな生活不適応な症状のことをいう。

BPSDとは、記憶障害に伴う、認知症に特有な行動・心理症状のことを言う。具体的には徘徊、妄想、不安、興奮、攻撃などのことである。こうした症状によって、家族の精神的介護負担が大きくなる。また、時に物やお金をしまい忘れ、一日中探される方がいる。そのうちに大事なものを取られたというようになることがある。たいていはお嫁さんなどの特定の家族が持って行ったと言う場合が多いようである。これを被害妄想という。

これらの症状は人によって出方が違い、症状も出る人と出ない人がいる。盗られたという物はよく探すとでてくる場合が多いが、一緒に探すことが大事である。これも訂正はなかなか困難である。こうした場合には、本人が納得するような対応を行うようにする。それでも妄想が継続する場合には、漢方薬や抗精神病薬を少量使用する場合もある。ただ、こうした症状も長くは続かない場合もあるので、周りがあわてずに落ち着いた対応をすることがよい。すなわち、症状を把握し、その原因を考えてみること、否定をしないことが重要である。

最近ではこのBSPDは薬物療法のみならず、よい環境やケアによって治療が可能であると考えられるようになってきている。またその予兆を捉え、よい対応やケアによってBPSDの予防も可能であると考えられている。

回想療法について

アメリカの老年精神医学者であるバトラー教授は、高齢者にとって回想することは価値があり、必要なものであると初めて述べた。彼の理論は、高齢者においても成長を認めるというエリクソンの発達の理論に基づいている。回想により、過去の経験を再評価し、成功、失敗といった経験をすべて見渡せ、成功したという人生観によって、人生が価値あるものと捉えられ、過去の執着や失敗から立ち直らせ、自我の統合と絶望と葛藤の解決が得られる可能性がある。バトラーは、高齢者には、自我の統合に達するために、熟練した療法士やグループの援助が必要なことがあると述べている。
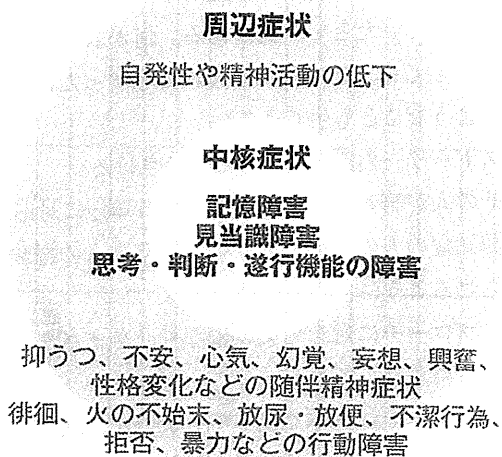
バトラー以来、回想に関してさまざまな理論が出てき

周辺症状

自発性や精神活動の低下

中核症状

記憶障害
見当識障害
思考・判断・遂行機能の障害

抑うつ、不安、心気、幻覚、妄想、興奮、
性格変化などの随伴精神症状
徘徊、火の不始末、放尿・放便、不潔行為、
拒否、暴力などの行動障害

図1　認知症におけるBPSDとは

得点

図2　認知機能に対する回想法の長期効果（認知機能（SKT－T）総得点推移）

ているが、まだはっきりしないことも多い。しかし、バトラーの言う「人生を振り返る回想」に加えて、楽しみや情報を共有する「単純な回想」も高齢者には重要である。回想の中で承認し、統合し、方向付け、結びつけることにより、高齢者の生活は再統合される。高齢者は、回想により自分の存在を確認し、時間の概念を正し、若い世代を導く責任を果たし、周囲との関係を理解することが可能である。回想の効果についての研究成果は十分ではないが、最近の回想に関する文献は、回想の治療的効果、用いる回想の種類、対象の性格、回想が有効な環境についてまで踏み込んでいるものがある。有効性をさらに証明できる再現性のある研究が待ち望まれている。

　回想法には、大きく分けて集団回想法、個人回想法があるが、われわれはいつでもどこでも回想法が可能となるように、テレビ回想法やパソコン回想法という新しい分野とソフトを開発した。また最近では、バーチャル回想法も完成させ、検証している。図1に示したように、地域で回想法を3年間継続したグループは認知機能が有意に改善し、継続しなかったグループは認知機能が悪化していた。こうした研究成果は少しずつ報告されている。

認知症の人と行う回想法

　回想法は多くの人が定義をほどこしているが、基本的には過去を振り返るプロセスである。その過去とは、一つの記憶、あるいは一連の記憶の集まりから成り立っている（ギブソン、1998年）。
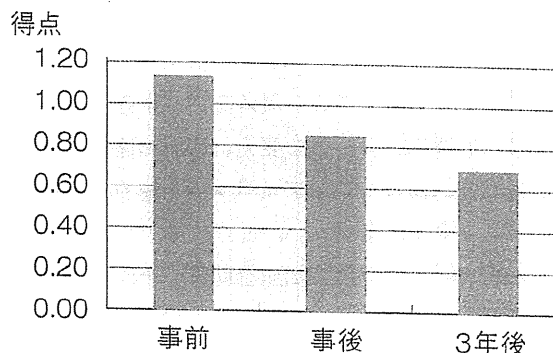
　回想法は、最初に1960年代にロバート・バトラーが"ライフレビュー"として紹介した（バトラー、1995年）。

バトラーはライフレビューを、死に向かっていることに気づくことで得られるごく自然な振り返りのプロセスだと見なした。それは、ノスタルジアや、軽い後悔、そして語り（ストーリーテリング）として現れる。そのような後悔の念から不安やうつ、絶望が生じることもあるが、ライフレビューでは、自分の人生の物語を語る人が自分の人生の意味と目的を深く理解できるように補佐する。これによって、ある種のBPSDは軽減もしくは消失することが可能であると考えられている。

　また一方、ライフレビューでは、その人が成しとげた業績を振り返り、過去の間違いを正し、敵と和解し、死ぬ準備をする機会を与える（バトラー、1995年）。しかしバトラーは、ライフレビューを行うことがいつでも勧められているわけではないと感じた。昔を懐かしむノスタルジックな感情を持つことは「過去に生きていること、自分のことばかり考えていること」なのだと、高齢者は教えられてきたからである（バトラー、1995年、xvii）。バトラーはこのような態度に反対し、ライフレビューは自然な癒しのプロセスの一部と見なされるべきだと主張した。最近では、家族史や郷土史、口述歴史を創り、維持するという考え方が多くなったため、回想は否定的ではなくむしろ肯定的な活動として見られるようになり、教育的、社会的、レクリエーション的、セラピー的な価値のある活動として認識されている（ギブソン、1998年）。

　フェイス・ギブソンは、高齢者に対して回想法を使う価値とその実用性について幅広く書いている（2004年）。彼女は、過去30年にわたってライフストーリーと回想のすべての要素を実践し、多くの高齢者の生活の質を向上させてきました。ギブソンは回想法の利点について次のように主張している。

- 一貫性及び継続性の感覚を促す
- 社会性を促し、新しい関係性を開く

- 個人のアイデンティティを確認し、自尊心の感情を励ます
- ライフレビューのプロセスを補助する
- 介護の関係性の本質を変え、職員の開発に貢献する
- 現在の機能についてアセスメントを行い、管理ケアプランを伝える
- 知識、価値、知恵の伝達を助け、それを証言する

興味深いのは、回想法は職員と高齢者の両方を助けることができるとしている点である。

さらにわれわれは、オーストラリアのエリザベス博士らが開発したスピリチュアル回想法について実践と研究を開始した。スピリチュアル回想法のプロジェクトでは、回想は確かに高齢者介護施設で関係性がつくれるように促し、高齢者の心理的な側面を支援することがわかった。また回想によって引き出されたストーリーは、介護する人と入所者の介護の関係を広げ、お互いの理解を深めた。入所者を個人として知るようになると、入所者に対する見方とケアの提供のしかたが変わる。介護する人の目から見た入所者のそのようなアイデンティティについて、クリスプ（2000年）はとても重要であると説いているが、ストーリーはそれを入所者に授ける助けとなったのである。

ギブソンは、認知症の高齢者と回想法を行う際の一般的な手引きを示した（2004年）。この手引きは、スピリチュアル回想法のグループをつくる場合も同じように重要になる。

- 一貫したアプローチを保ち、時間をかけて信頼を築く
- お互いの喜びと楽しみを強調する
- スピードを落とし、（高齢者が）答えを出して伝えるための時間をとる
- こちらがイニシアチブをとって、手を差し伸べ、つながりをつくり、維持する
- 気分、活気、興味の変化を読みとり、対応する
- きっかけつくりを活用するなら、その人の経験と過去に興味があったことに合わせる
- 非言語による活動を強調する
- ストーリーは疑うよりもまず信じ、自分の判断を保留する
- 象徴的な会話を読み解く努力をする（意味がすぐにわからない言葉を使うことがあっても、それが話し手にとって何かを象徴している場合がある。キリックによれば、ある認知症の人が語った『さるのパズ

ル』という詩では、薬を処方する看護師を"さる"と呼んでいたという例がある。何か表現したい意味があっても、その言葉を忘れてしまったために、このようなことも生じうる）
- ストーリーの真偽を問うことはさける
- その人が語るストーリーの感情の部分に対応する
- 認知症の人の世界に入りこみ、その人の経験を認められるように、心の準備をする
- アプローチに対して柔軟になり、さまざまに変えられる用意をしておく
- 回想法をそれ自体で使ってもよいが、創造的な芸術活動を行うためのパスポートとして使ってもよい
- つねに同意を求め、敬意を表すこと

（ギブソン、2004年、p.247）

回想法のBPSDに対する効果

認知症の非薬物療法には病院や施設などで作業療法士などにより行われるリハビリテーションや多くの在宅サービスのデイケアやデイサービスで行われるものなどがある。内容についてはそれぞれの施設により特徴があり、必ずしも科学的なデータが集積されているわけではないが、認知症患者の表情や抑うつなどの気分がよくなったり、反応がよくなったりなどの変化が観察される場合がある。回想法により、BPSDが軽減し、QOLの改善する可能性があるということである。回想法では本人の話しを聞き、本人の存在を認めるという過程がある。この結果が心理療法としての回想法の効果が期待できる点である。具体的には、集中力が乏しく、徘徊や多動のある認知症の方が、本人にとって興味のある回想法に参加した場合に最後まで集中力が途切れず、会話に参加し、活動性や社会性を取り戻したケースも経験した。

基本的には認知機能そのものは改善することは困難であるが、BPSDの改善が見られたり、認知機能の維持ができることにより、認知症の悪化が防止できるかどうかが大きな課題となっており、認知症の進展予防はある程度可能ではないかと研究者の間でも考えられている。少なくとも認知症に対するリハビリを行うことで患者や家族の支援を行い、QOLの向上を図ることが重要である。

黒川らによれば、MOSESスケールを用いた認知症に対する回想法について、認知機能の改善はみられなかったが、精神症状のうち抑うつ感において有意な効果を認めた（表）。他にも、意欲の向上やQOLの向上への効果が報告されている。すなわち、認知症の回想法は、まず

精神的な安定、不安の解消などがあり、二次的にBPSDの改善が図られることになる。BPSDはよいケアによっても軽減される。すなわち、ケアは治療手段の一つであり、回想法も非薬物療法でもあり、ケアの一つといえる。また、北名古屋市の報告においても、参加意欲、満足度において有意な変化が観察されている（図4）。

スピリチュアル回想法の効果

認知症の高齢者のケアの日常は、身体的なケアの処理に落ち込んでしまいがちなことがよくあり、心理社会的なケアやスピリチュアルケアが犠牲になりかねない。確かに職員の人手が足りないのに高いレベルのケアが必要な高齢者がいる忙しい状況では、物理的なニーズが優先され、その部分に最初に対応する。そのうえでまだ時間があれば、ほかの部分のケアに当てることもできるのであろう。しかしながら、ホリスティックなケアを行なわなければならないと思うならば、高齢者の身体的、社会的、心理的、そしてスピリチュアルなニーズに気づかなければならない。スピリチュアルなニーズはほかのニーズと同じぐらい重要なものである。ある高齢者ケアの責
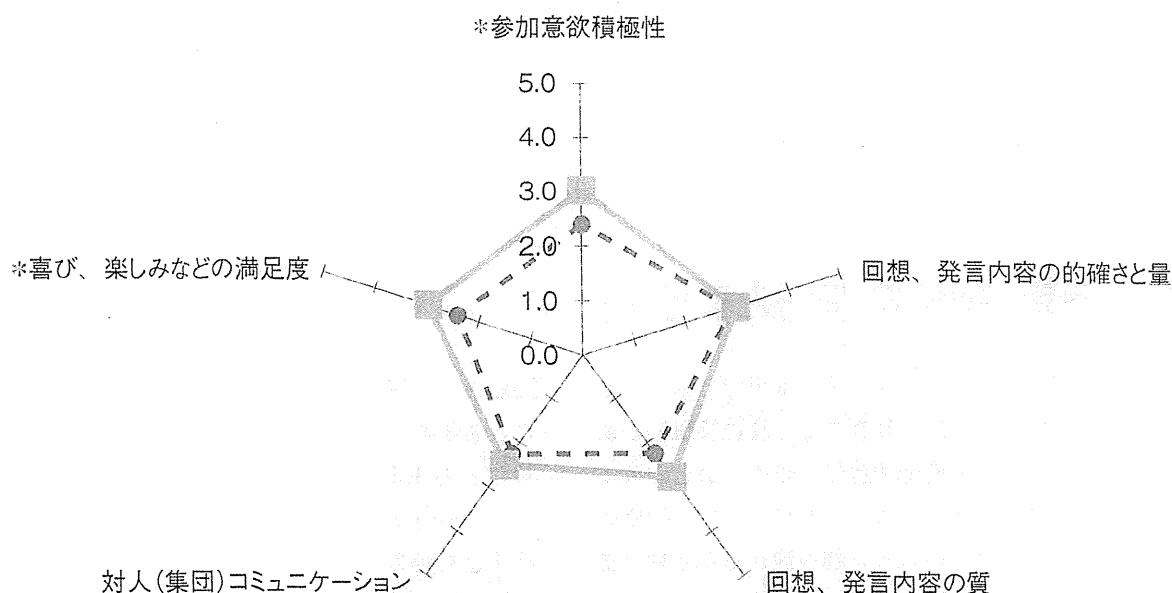
※参加意欲積極性

※喜び、楽しみなどの満足度

回想、発言内容の的確さと量

対人（集団）コミュニケーション

回想、発言内容の質

図3　回想法モデル事業によるセッション評価（北名古屋市による）

表　認知症の重症度別MOSESスケール下位領域別結果（黒川による）

	グループ施行前MEAN（SD）	グループ施行後MEAN（SD）	サインランク検定
軽症群〔N＝21〕			
セルケア	13.7（5.9）	13.8（5.8）	n. s.
見当識	15.0（6.3）	14.5（6.4）	n. s.
抑うつ感	11.1（3.9）	9.5（2.3）	Sgn Rank＝34 p＝0.0137
いらいら感・怒り	11.5（4.7）	11.0（2.8）	n. s.
引きこもり	15.9（6.3）	15.2（6.1）	n. s.
重症群〔N＝19〕			
セルケア	14.6（6.4）	14.7（6.4）	n. s.
見当識	22.1（5.5）	21.7（5.0）	n. s.
抑うつ感	12.7（5.7）	11.7（4.4）	n. s.
いらいら感・怒り	11.1（2.1）	10.7（2.5）	n. s.
引きこもり	17.3（3.9）	18.3（4.4）	n. s.

任者は、自分の仕事の4分の3は嘆き、罪悪感、怖れに関することである、と言ったほどである。これらは明らかにスピリチュアルな領域の問題である。

スピリチュアルケアを行うことは、スピリチュアリティという概念——つまり中核となる意味、一番深い人生の意味と関係性——に入り込むことになる。スピリチュアリティというものを、神や崇高な存在との関係性で表現する高齢者もいるであろうし、自然や環境、家族、友達などを通して表現する高齢者もいるであろう。スピリチュアリティとは、私たちという存在の一番中心にある肝心な部分で、私たちはそこから人生のすべてに反応、対応していく。怒り、憎しみ、愛、許し、希望は、この核の部分から生じるのである。

おわりに

回想法はもともと心理療法の一つであり、その実践において、さまざまな効果が報告されている。精神的に、心理的におちつきを取り戻し、認知症になっても精神的な安定を得ることができる一つの方法である。さらにデータを積み重ねてBPSDに対する効果も根拠をもって示せるようになることを期待している。

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Column　認知症予防と回想法

最近の報告では、認知症の予防は可能ではないかと考えられている。疫学調査では、脳血管障害があるとアルツハイマー型認知症になりやすいとわれている。また高血圧症があるとアルツハイマー型認知症に約3倍なりやすい、また糖尿病があると約2倍アルツハイマー型認知症になりやすいという報告もある。つまり、今やアルツハイマー型認知症は生活習慣病の一つと考えることができる。若い時からこうした病気の治療や予防がアルツハイマー型認知症の予防につながる可能性がある。

また、運動は認知機能の低下を軽減する可能性がある。なかでも有酸素運動がよいとされている。具体的には一日30分以上歩くことが目安である。運動以外には好奇心を持つこと、知的活動を継続することも重要である。趣味の活動や好奇心を持ち続けることも重要である。そのためには料理を続けることや旅行の企画などもよいとされている。さらに、相手と言葉のやり取りをする会話を多くすることも必要である。会話量を多くするためには、会話のきっかけを誘導しやすい回想法が推奨される。そして仲間づくり、社会との交流、世代間交流、BPSDの軽減、生きがいの維持などに有用と考えられる。また認知機能低下の予防には野菜・果物の摂取の重要性もいうまでもない。他には少量の赤ワインも推奨されている。赤ワインの成分のうちレスベラトロールの摂取がよいのではないかと報告されている。

Review

Background to Discuss Guidelines for Control of Plasma HDL-Cholesterol in Japan*

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A decrease in high density lipoprotein-cholesterol (HDL-C) is a strong risk factor for atherosclerotic disorders in Japan, probably more important than an increase in low density lipoprotein-cholesterol (LDL-C). While there are rational grounds for the argument that elevation of HDL-C leads to decreased risk, there has as yet been no direct evidence of such an effect. If elevation of HDL-C decreases the risk, this effect is expected throughout the normal range of HDL-C or perhaps even higher than that. Simulation based on epidemiological data indicated that it may eventually reduce the incidence of ischemic heart disease by 60-70% in Japan. In the risk management guideline, "low" HDL-C is presently defined as 40 mg/dL or below. While there is no evidence that strongly urges a change in this definition, the results of epidemiological studies support "The higher the HDL-C level, the lower the risk," even in the "normal range". Elevation of the HDL-C level may reduce the risk, probably at least up to 70 mg/dL; however, there are no supportive data for this effect still being obtained over 80 mg/dL. Patients with homozygous CETP deficiency should be followed-up while controlling other risk factors, so as not to dismiss the possibility of a risk increase with an extremely elevated HDL-C level.

Clinical Relevance of HDL-C Management

Numbers of epidemiological studies have established that the risk of coronary artery disease increases as plasma HDL-C decreases, and decreases as it increases. In addition, many experimental approaches

have demonstrated that cholesterol is extracted by HDL particles in the culture medium from cultured cells, including macrophages overloaded with cholesterol.

From these two lines of evidence, HDL is believed to be a "preventive factor" against atherosclerosis. This view is strongly associated with the hypothesis that HDL plays a central role in the recovery of cholesterol molecules from tissues and organs, which cannot be catabolized in peripheral cells, and in their transport to the liver for conversion to bile acids. From the viewpoint of public health, many research results suggest that a decrease in HDL-C contributes more than an increase in LDL-C to the development of ischemic heart disease in Japan. In studies conducted at Nagoya City University, for example, narrowing of the coronary artery was more closely related to triglycerides (TG) and HDL-C than to total cholesterol (TC) or LDL-C[1, 2], and this tendency is commonly observed in many other reports. HDL-C is thus suggested to be a strong determinant of atherosclerosis in Japan and perhaps a more important risk factor than LDL-C from a public health point of view.

HDL is smaller (12 nm or less in diameter) than other lipoproteins, abundant in protein and does not contain much TG, so it has a greater hydrated density than other lipoproteins (d = 1.063-1.21). Similarly to other plasma lipoproteins, however, HDL functions to transport cholesterol among cells or organs using the flow of blood or extracellular fluid. Cholesterol, an essential molecule for the life of animals, requires a number of steps and plenty of energy for synthesis, and its dietary intake is not always guaranteed; therefore, the animal body has developed systems to use cholesterol sparingly as a precious material. As a result, little cholesterol is converted to energy in its catabolism, and, with the exception of a very small amount used for the production of steroid hormones, most cholesterol is transported to the liver for conversion to bile acids and is recycled an reused in the intestine before excretion. Its steroid backbone is not degraded in the metabolism in the animal body and finally broken down by microorganisms in the environment. Therefore, cholesterol molecules must be released from most somatic cells for metabolic homeostasis, and HDL receives these cholesterol molecules for their transport. Cholesterol is converted to cholesteryl acylester (CE) as a fatty acyl chain and transferred from phosphatidylcholine to its hydroxyl group to form an ester bond, for packing cholesterol molecules into the core of HDL. CE is recovered by the liver directly from HDL by a selective uptake reaction, or as LDL particles after being transferred to apolipoprotein

B-containing lipoproteins by CE transfer protein (CETP). As a result of these activities, HDL is considered to exert a preventive effect against atherosclerosis as it interferes with the excessive accumulation of cholesterol in cells from LDL, etc., by extracting it.

No drug has been marketed yet to independently increases HDL-C; therefore, the question of whether increasing HDL-C is effective for preventing and treating atherosclerotic disorders has not been answered. However, researchers have recently directed more attention to HDL and, accordingly, more research results on HDL metabolism have recently accumulated. Much effort to develop drugs targeting HDL has been initiated. On the other hand, some existing drugs are known to increase plasma HDL-C. Drugs that reduce TG generally increase HDL-C, primarily because these drugs reverse low HDL-C induced by high TG through CETP[3]. In addition, fibrates have been suggested to directly increase HDL production[4]. Many clinical studies have also shown that statins elevate HDL-C as well as decreasing LDL-C. Concerning their mechanism, statins have recently been reported to increase HDL synthesis in the liver, unlike their effects in peripheral tissues[5]. The mechanism of the increase in HDL through exercise and alcohol intake has not been sufficiently elucidated. As mentioned below, the question of whether HDL-C increase by inhibiting CETP prevents atherogenesis has been shelved because of the failure to develop a CETP-inhibiting drug, perhaps due to a business-oriented strategy[6].

Position of HDL in Risk-Reducing Strategies

Large-scale clinical studies targeted to high LDL-C and high TG, major risk factors of atherosclerotic diseases, such as ischemic heart disease, have indicated that ischemic heart disease can be prevented by reducing LDL-C and TG and, particularly, that mortality due to the disease can be lowered by controlling the LDL-C level, with a consequent reduction in the total number of deaths in the high-risk group. In addition, based on stratified analysis of the results of many clinical trials, the conclusion has been reached that an increase in HDL-C contributes to the prevention of diseases as a "statistically independent factor". In consideration of the above-stated marked epidemiological contribution of HDL-C as a "negative risk factor" and the significant "indirect evidence" of an increase in HDL-C in the prevention of atherogenesis, the argument that a standard should be set for the control of HDL-C appears to be well grounded. However, it is also true that a consensus concerning

HDL-C management, similar to that in evidence-based quantitative guidelines for the control of LDL-C and the management and treatment of high TG, is difficult to reach at present, when no therapeutic technique specifically targeted to increase HDL-C has reached a practical level and there is no direct evidence concerning the prevention and treatment of atherosclerotic disorders using such a technique. Thus, any therapeutic guideline regarding HDL-C is merely a "proposal" based on indirect circumstantial evidence until the results of a large-scale clinical trial of a technique to specifically increase HDL-C become available.

Recently, some negative implications have been spread regarding the anti-atherosclerotic effect of an increase in HDL-C, inviting some confusion in the discussion. One is the discontinuation of a large-scale clinical study on the prevention of ischemic heart disease by increasing HDL-C, carried out to develop the CETP inhibitor torcetrapib, due to an increase in the mortality rate in the treated group[6]. Another is a large-scale epidemiological study reporting that a mutation to cause dysfunction of ABCA1, a rate-regulating protein of HDL biogenesis, is not likely to be a risk factor of ischemic heart disease[7]. The first report appears to support the contention of researchers arguing that "an increase in HDL-C by CETP inhibition has no anti-atherosclerotic effect," and allowed the generalized assertion that "the HDL-C increasing strategy is a mistake" to emerge; however, these reports do not necessarily mean the failure of CETP inhibitors themselves, and the pressor effect of a particular drug, torcetrapib, is likely to have led to such results. This incidence postponed an answer to the question of whether increasing HDL-C with a CETP inhibitor is a good idea, the most important medical issue, and markedly complicated the strategy for developing HDL-C elevating agents in general. Also, studies on ABCA1 mutation have shown that the maximum decrease in HDL is about 20%, suggesting that this does not necessarily reject the benefit of high HDL-C.

Under these circumstances, the position has not changed that an elevation of HDL-C is an important part of the anti-atherosclerotic strategy, including CETP inhibition. The above discussion may be summarized as follows: 1) a decrease in HDL-C is a strong risk factor for atherosclerotic disorders, 2) there are rational grounds for the supposition that this risk can be reduced by correcting low HDL-C (increasing HDL-C), but 3) no direct evidence has been obtained that increasing HDL-C is effective for the prevention and treatment of atherosclerotic disorders, 4) changes in HDL-C may include changes in the number and size of HDL particles, and the difference in their clinical significance may become a problem in the future.

Simulation of Atherosclerosis Prevention by Increasing HDL-C

There are qualitative scientific grounds for lowering the LDL-C level to reduce the risk of atherosclerotic disorders or, more specifically from an evidence-based viewpoint, to reduce the probability of the occurrence of ischemic heart disease; however, to prepare specific guidelines for diagnosis and treatment, quantitative criteria are considered indispensable. This is a problem with the concept in setting therapeutic goals for target groups. A quantitative profile of increases in the risk associated with elevations of the LDL-C level is necessary, and, if possible, results directly showing that the treatment reverses this curve of increasing risk must be presented. It is not impossible to set medical goals according to this parameter alone, but how criteria are set markedly affects the cost-effectiveness of treatment depending on the distribution of the HDL-C level and demographic composition of the target population; therefore, simulation involving these factors is one of the tasks that must be implemented to devise guidelines.

Fig. 1B shows the relationship between the LDL-C level and incidence (per 1,000 people) of myocardial infarction (lethal/non-lethal) in the JLIT, a cohort study that followed up a simvastatin-treated group for 5 years[8]. From this graph, the distribution of the HDL-C level in Japanese of corresponding ages (**Fig. 1A**)[9], and the population composition of the Japanese by age, the number of people needed to treat (NNT) and number of patients in whom the disease is prevented can be calculated when the control target is fulfilled 100% by reducing LDL-C (**Fig. 1C**). According to this calculation, the primary prevention efficacy, expressed as the inverse of NNT, is high at a target LDL-C level of 140 mg/dL but begins to fall rapidly as it is reduced to 120 mg/dL. Reflecting this, the incidence of myocardial infarction shows no further decrease when the target control level is set lower than 140 mg/dL. According to this analysis, roughly 140 mg/dL is considered to be medically and medico-economically appropriate as the target control level of LDL-C for primary prevention, at least on the basis of the results of the JLIT. In this case, the maximum preventive effect is 30-35% for myocardial infarction, which is in close agreement with the results of the MEGA study, the only large-scale interventional study of ischemic heart disease conducted in Japan using a statin[10].

Fig. 2B shows the decreases in the risk of ischemic heart disease associated with elevations of the HDL-C level in 3 epidemiological studies with prospective risk evaluation carried out in Japan including the JLIT[8, 11, 12]. While it is difficult to directly compare the incidences because the clinical definition of the endpoint varied among the studies, the peak decrease of the risk associated with increased HDL-C is less notable than that associated with the change of LDL-C in all studies. In other words, HDL-C-dependent decreases in the risk were observed even at HDL-C exceeding 60 mg/dL in all 3 studies. **Fig. 2C** shows the results of simulation similar to that of LDL-C performed using the results of the JLIT, which analyzed the therapeutic outcomes, on the basis of the HDL-C distribution curve in Japanese (**Fig. 2A**)[9] and the population composition. Since decreases in the risk associated with increases in HDL-C have not been directly demonstrated, the simulation was based on the hypothesis that increases in the risk associated with decreases in HDL can be reversed by increasing HDL-C. In contrast with the results concerning LDL, little decrease or peaking of the preventive efficacy associated with increased HDL-C was observed with an HDL-C level over 60 mg/dL. Reflecting this, the preventive effect against myocardial infarction could still be increased by raising the HDL-C level beyond 60 mg/dL. These results suggest that, under the hypothesis that the risk of myocardial infarction is reversibly reduced by elevating HDL-C, myocardial infarction can be prevented in 60-70% of the Japanese population at risk.

As far as these results are concerned, it can be concluded that the criterion of a "low HDL-C level" is unnecessary in guidelines for the control of HDL-C, and that the higher the HDL-C the better; however, according to the results in **Fig. 2A**, some studies have shown relatively large increases in the risk associated with decreases in HDL-C at about 50 mg/dL or below and, particularly, below 40 mg/dL; therefore, it may be reasonable to set a "caution level" around here. On the other hand, views on high HDL-C are divided. First, there is no epidemiological evidence indicating that higher HDL-C is better, even when it exceeds 60 mg/dL. This is probably because the population falling in this category is small (even though high HDL-C is relatively frequent in Japan) and cardiovascular incidence is low, making it difficult to obtain significant results.

In addition, the controversy is further complicated by the inclusion in this category of cases of homozygous CETP-deficient patients, in which elevations of HDL may not be considered to decrease the
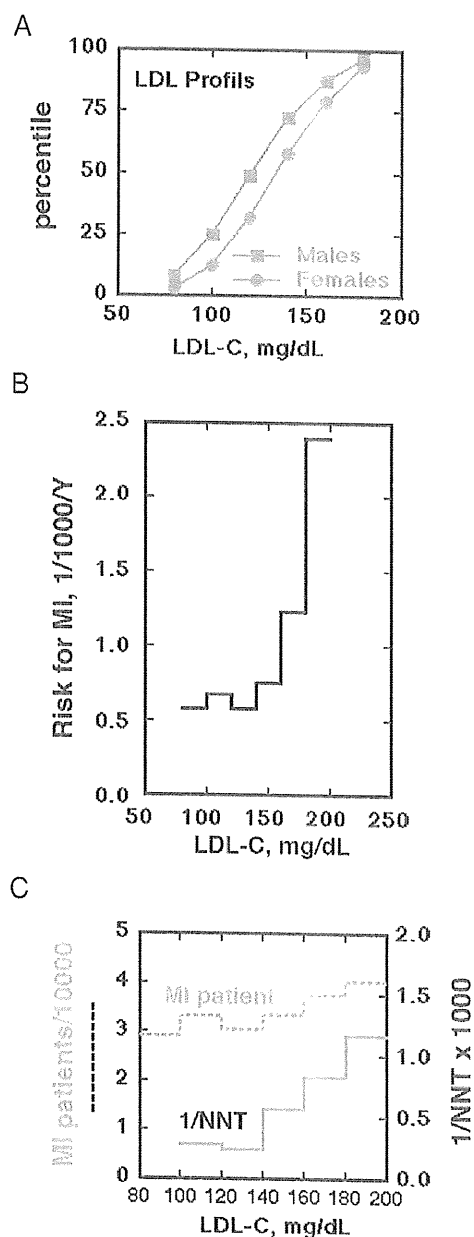
Fig. 1. Prevention of ischemic heart disease in Japanese by reducing LDL.

A: Distribution curve of the plasma LDL-C level in Japanese[9]. B: Relationship between the plasma LDL-C level and risk of "myocardial infarction" observed in the JLIT[8]. C: Simulation of the prevention of "myocardial infarction" based on Graphs A and B and demographic data for Japanese. Solid lines represent the inverse of NNT (·1,000) as an indicator of the treatment efficacy for managing lipoproteins to a target. The value of each horizontal segment is the efficacy when reaching a target LDL-C value at the left end of the segment in all Japanese at ages covered by the JLIT. Each horizontal segment of broken lines represents the number of MI patients when LDL is reduced to or lower than the level of the right end of the segment.

risk. The argument that increased HDL does not necessarily contribute to decreased risk is supported by the absence of a further decrease in the risk when the HDL-C increases above 70 mg/dL and the increased risk in patients with a homozygous CETP defect[13]; however, HDL-C is usually 80 mg/dL or higher and often reaches 100-200 mg/dL or even higher in patients with a homozygous CETP defect[13-16], and such high HDL-C should be considered separately from regular high HDL-C. Still, researchers are not in agreement concerning the increase in risk. In this sense, the differentiation of homozygous CETP deficiency is necessary in patients showing HDL-C exceeding 80 mg/dL, and there is no clinical or experimental evidence pointing to any conclusion about whether HDL-C should be maintained above this level. Nevertheless, the high prevalence of CETP deficiency among Japanese (1/20 for D442G and 1/100 for I14A) may have a limited but significant impact on the association between high HDL and atherogenesis in Japanese.

Proposal of Standards for Management of the HDL-C Level

On the basis of the above discussion, this article summarizes a proposal for the management of the HDL-C level as follows:

1) The evidence status is summarized as (1) A decrease in HDL-C is a strong risk factor for atherosclerotic disorders, particularly in Japan and, from the viewpoint of public health, it may be a more important risk factor than an increase in LDL-C; (2) While there are rational grounds for the argument that elevated HDL-C leads to a decreased risk, (3) there is as yet no direct evidence that elevating HDL-C is effective for the prevention and treatment of atherosclerotic disorders.

2) If elevations of HDL-C through interventional measures cause reversible decreases in the risk, this effect is expected, at least, up to 60 mg/dL or higher, and a simulation indicated that it eventually reduce the incidence of ischemic heart disease in Japan by 60-70%.

3) In risk management, high HDL-C is presently defined as 40 mg/dL or below. While there is no evidence that strongly urges a change in this definition, the results of epidemiological studies support "the higher the HDL-C level, the lower the risk," even in the "normal range" so that elevation of HDL-C may reduce the risk probably at least up to 70 mg/dL; however, there are no supportive data for this effect still being obtained over 80 mg/dL. Patients with a
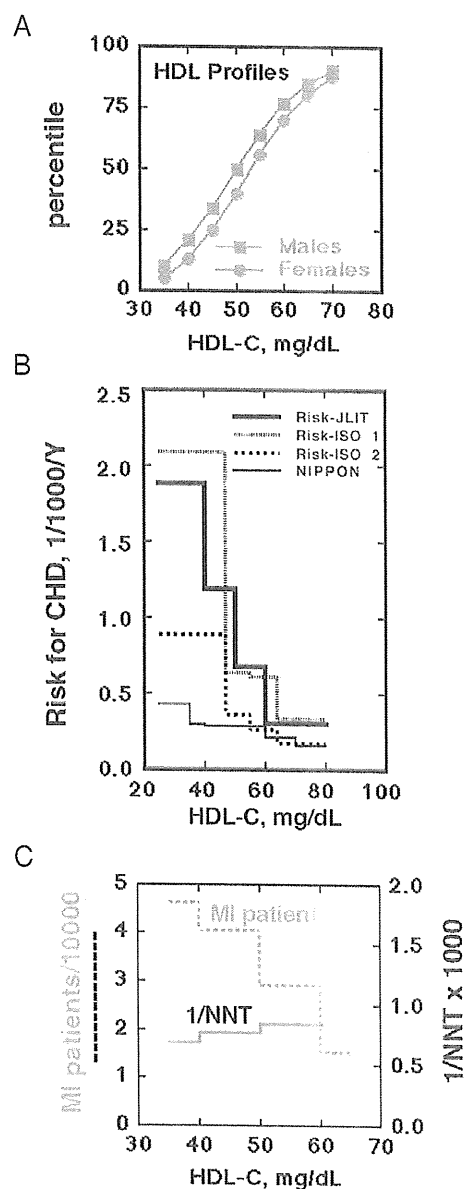

Fig. 2. Prevention of ischemic heart disease in Japanese by increasing HDL-C.

A: Distribution curve of the plasma HDL-C level in Japanese[9]. B: Relationship between the plasma HDL-CH level and risk of ischemic heart disease in Japanese. "Myocardial infarction" in the JLIT[8], "coronary artery disease" and "definitive diagnosis of myocardial infarction" by Kitamura, Iso, et al.[11], and "deaths due to cardiovascular diseases" according to NIPPON DATA[12]. C: Simulation for prevention of "myocardial infarction" based on Graphs A and B and demographic data of Japanese. Solid lines represent the inverse of NNT (x 1000) as an indicator of the treatment efficacy for managing lipoproteins to a target. The value of each horizontal segment is the efficacy when reaching a target HDL level at the right end of the horizontal segment in all Japanese at ages covered by the JLIT. Each horizontal segment of broken lines represents the number of MI patients when HDL is raised to the left end of the segment.

homozygous CETP deficiency should be followed-up while controlling other risk factors, not to dismiss the possibility of the risk increase with an extremely elevated HDL-C level. A gender-dependent strategy for HDL-C management should be discussed when further epidemiological and clinical evidence becomes available.

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ORIGINAL ARTICLE

Both conventional indices of cognitive function and frailty predict levels of care required in a long-term care insurance program for memory clinic patients in Japan

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Aim: To delineate relationships among cognitive function, frailty and level of care required in the Japanese long-term care insurance program (LTCIP) in outpatient memory clinic patients.

Methods: This was a cross-sectional study carried out at an outpatient memory clinic. Participants were 201 cognitively impaired patients. Cognitive function was measured by the Mini-Mental State Examination (MMSE). Frailty was measured by Timed Up & Go (TUG) and grip strength. Waist circumference, body mass index, living arrangement and level of care required in the LTCIP (rank 1 minor disability to rank 7 severe disability) were also assessed.

Results: Mean age, MMSE score, TUG score and grip strength were 78.8 ± 6.9 years, 19.6 ± 6.1, 14.6 ± 6.7 s and 16.9 ± 7.5 kg, respectively. A total of 70 patients (34.8%) had not applied for the certification, at least in part because of their younger age and existence of family caregivers. LTCIP rank was correlated both with MMSE score (β: -0.49, $P = 0.001$), grip strength (β: -0.27, $P = 0.005$) and living alone (β: -0.18, $P = 0.03$), but not with TUG score (β: 0.14, $P = 0.105$).

Conclusion: In outpatients of a memory clinic, care ranks, which define the upper limit of monthly benefit in the Japanese LTCIP, were influenced by age, cognitive function, frailty and living arrangements. Understanding the relationship among these parameters would be useful in predicting the needs of cognitively impaired patients and important when comparing the possible services provided by long-term care systems for them worldwide. **Geriatr Gerontol Int 2012; ●●: ●●–●●.**

Keywords: cognition, dementia, frailty, living arrangements, long-term care insurance program.

Introduction

With the accelerated aging of the population, the number of patients suffering from dementia is increasing. There were estimated to be more than 1.8 million dementia patients in Japan in 2005, and 24.3 million

worldwide in 2001.[1] To improve quality of life for cognitively impaired patients, it is important to use social services in addition to the care provided by family caregivers.[2] In developed countries facing the social burden of aging, care systems have been constructed taking into account national characteristics, such as history, nationality, percentage of elderly people and economic conditions.[3,4] The main framework of these systems consists of comprehensive evaluation of the elderly and provision of care in-kind or payments to help families secure care, according to the anticipated care requirement. In Japan, a long-term care insurance program (LTCIP) has been implemented since 2000.[5–7]

Despite the importance of social services for dementia patients, few studies have investigated correlations between anticipated care requirement, which determines the care services allocated, with common indices of dementia severity, such as the Mini-Mental State Examination (MMSE).[8,9] When predicting the amount of care needed, care providers carry out comprehensive assessments of activities of daily living (ADL), instrumental activities of daily living (IADL), cognition, behavioral and psychological symptoms of dementia (BPSD), functions of sensory organs important for communication (particularly hearing and visual acuity), nutritional status, and existence of pain.[6,10] It is important that such assessments are comprehensive in order to evaluate a broad range of functions in elderly people; however, the complex nature of these assessments and the complex condition of the elderly might hamper a simple description of care needs of dementia patients. Care needs of most of dementia patients might instead be assessed in terms of cognitive impairment and ambulatory problems if BPSD are appropriately treated. In the present report, we compare the level of care required, which determines the care allocated, with indices of cognition and frailty. We also intended to carry out this analysis to provide information for the international comparison of care assurance systems that could contribute to their improvement.

Methods

Participants

Participants were 201 patients with cognitive impairment regularly followed up at the outpatient memory clinic in Kyoto University Hospital, Kyoto, Japan. Types of dementia were Alzheimer's disease (AD, $n = 144$), vascular dementia (VD, $n = 9$), mixed type dementia ($n = 10$), dementia with Lewy bodies (DLB, $n = 13$) and other types of dementia ($n = 3$; a semantic dementia, a Fahr disease and an alcohol dementia). A total of 22 patients with mild cognitive impairment (MCI) were also included. The diagnosis of AD, VD, DLB and MCI was made according to the following criteria: AD,

Diagnostic and Statistical Manual of Mental Disorders, 4th edition, and National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association;[11,12] VD, National Institute of Neurological Disorders and Stroke, and Association Internationale pour la Recherché et l'Enseignement en Neurosciences;[13] DLB, McKeith's;[14] and MCI, Petersen's.[15] The diagnosis of mixed-type dementia was made when patients were found to have dementia not explained solely by AD or VD. The present study was approved by the ethics committee of Kyoto University, and written informed consent was obtained from participants.

Measures

Participants were evaluated at a regular outpatient consultation from April to July, 2008. The evaluation consisted of measurements of frailty and an interview of caregivers to obtain information relevant to the patients care. Cognitive status was evaluated by the MMSE[16] carried out within 6 months of this evaluation, usually on another visit. Timed Up & Go test (TUG) and grip strength were used for the assessment of frailty.[17,18] Body mass index (BMI) and waist circumference were also measured. The caregiver interview consisted of questions on living arrangements, frequency of care provided by family members not living with the patient and level of care required in the LTCIP. We also asked about the number of family members who provided care, but did not live with the patient, and how far these family members lived from the patients' home, although some of this information was not included in the present report.

LTCIP in Japan

The care requirement was determined by a national system (Fig. 1). The LTCIP was implemented in Japan in 2000 and underwent major reform in 2005.[6,10] The original version listed seven ranks of care required (not eligible, needing support and needing care levels 1–5). After the reform, these ranks were expanded to eight (not eligible, needing support levels 1 and 2, and needing care levels 1–5). As level of required care is evaluated every 6–24 months, depending on the stability of the physical and mental conditions of the elderly, all participants in the present study had their level of care required assessed after the reform. In the Japanese LTCIP, the first step to assessing level of care required involves a computer algorithm to determine the estimated time assumed necessary for the care of an individual elderly person. In this assessment, the time is estimated by trained municipal officers using a 79-item checklist consisting of basic and instrumental ADL, cognitive function, BPSD, and auditory acuity. In the
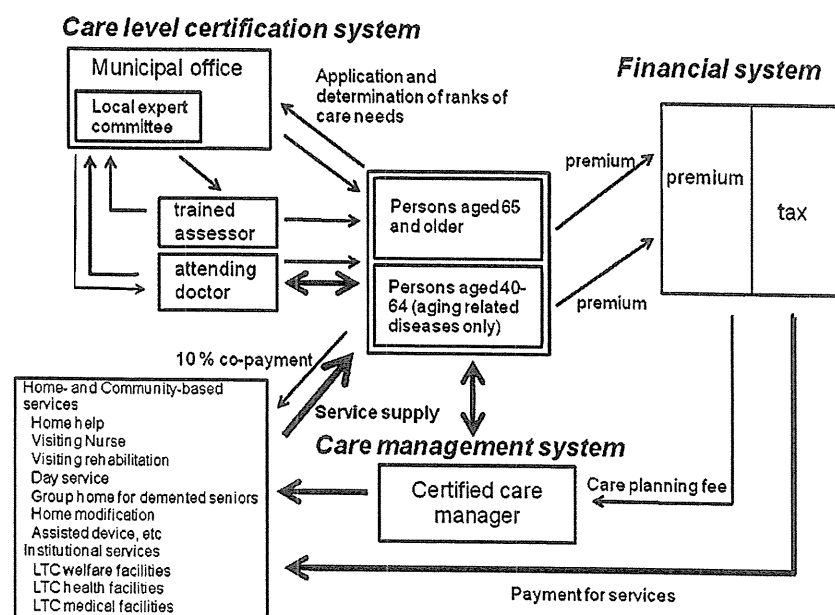
Care level certification system

Figure 1 Schema of the long-term care insurance program in Japan.

second step, a local expert committee checks the results of the first step and a medical certificate from the elderly person's attending physician, and finally decides on the level of care required (Fig. 1). If the elderly person applies for certification, and their physical and cognitive status is not frail enough for level 1 of care support, they are not eligible for LTCIP services. There were no such patients in the present series of participants. However, there were patients who opted not to apply for care certification, because they or their family did not think that they needed social services, and we designated these patients as rank 0. Care support levels 1 and 2 are designated here as ranks 1 and 2, and care needs levels 1 to 5 are designated as ranks 3 to 7, respectively.

In the Japanese LTCIP, care benefits are provided in kind, and the upper limit of the benefit available in a month expressed as the amount of money equivalent to the cost of services is determined according to the level of care required. The upper limits per month are 49 700 yen (552 US dollars ($) at an exchange rate of 90 yen to 1 US dollar) for rank 1; 104 000 yen ($1156) for rank 2; 165 800 yen ($1842) for rank 3; 194 800 yen ($2164) for rank 4; 267 500 yen ($2972) for rank 5; 306 000 yen ($3400) for rank 6 and 358 300 yen ($3981) for rank 7, respectively. The benefits in kind are provided as home- and community-based services, such as home help, visiting nurse, day services and group home service, or as institutional services, such as long-term care welfare facilities, health facilities and medical facilities. The charges for each service are uniform throughout Japan. People using care services usually ask their certified care manager to draw up a care plan (Fig. 1).

Statistical analysis

All data are presented as mean ± standard deviation (SD). Student's *t*-tests were used to assess differences between group means for continuous variables. Pearson's χ^2-tests were used to assess differences between groups for categorical variables. Because of the small sample size, patients in care ranks 1 and 2, and those in care ranks 6 and 7 were combined for analysis. One-way analysis of variance (ANOVA) was used to analyze differences between groups. Post-hoc comparisons were made using the Tukey–Kramer test. Finally, a multiple regression analyses was carried out with care rank as the dependent variable, and age, education, sex, MMSE score, grip strength and TUG score as independent variables.

Results

Demographic information and basic characteristics of participants are shown in Table 1. No significant differences were found in age, education or sex among the diagnostic entities. There were, however, significant differences in MMSE score between AD and MCI. There were no statistical differences in TUG or grip strength among the groups. In DLB patients, the mean of MMSE score was higher than that in AD, but the frailty indices were worse than in AD. When MMSE scores were divided by the reciprocal of TUG and compared between diagnoses, significant differences were apparent among the groups ($F = 6.577$, $P < 0.001$). This modified score was significantly higher in DLB than in AD (AD 250.2 ± 110.5, DLB 404.3 ± 245.7,

Table 1 Demographic information and basic characteristics of participants

n	Total 201	AD 144	MCI 22	MIX 10	VD 9	DLB 13	Other 3
Age (years)							
Mean (SD)	78.7 (7.0)	78.9 (7.3)	77.7 (5.7)	78.9 (7.5)	80.6 (6.6)	79.3 (5.2)	69.0 (1.7)
Sex							
Female	132	96	15	5	5	11	0
Male	69	48	7	5	4	2	3
MMSE*							
Female (%)	65.7	66.7	68.2	50.0	55.6	84.6	0.0
Mean (SD)	19.7 (6.1)	18.0 (5.8)	26.7 (1.5)	21.0 (2.6)	23.6 (2.4)	22.2 (6.2)	18.0 (8.7)
TUG (s)							
Mean (SD)	14.4 (6.4)	14.6 (6.6)	12.0 (4.1)	13.9 (2.9)	15.4 (5.3)	17.1 (9.0)	9.3 (2.2)
Grip strength (kg)							
Mean (SD)	16.9 (7.5)	16.7 (7.7)	19.1 (9.0)	16.8 (5.9)	16.9 (6.6)	13.9 (4.6)	20.7 (3.1)
BMI* (kg/m^2)							
Mean (SD)	22.4 (3.5)	22.1 (3.5)	22.5 (2.8)	24.9 (4.0)	25.0 (1.9)	22.0 (3.2)	20.4 (4.0)
Waist circumference* (cm)							
Mean (SD)	84.1 (9.0)	83.1 (9.3)	85.1 (7.0)	89.5 (10.8)	89.5 (5.0)	83.4 (6.6)	92.7 (6.6)
Living arrangement							
Living alone	33	20	7	1	1	4	0
Other	168	124	15	9	8	9	3
Living alone (%)	16.4	13.9	31.8	10.0	11.1	30.8	0.0
Care rank*							
Mean (SD)	2.4 (2.1)	2.6 (2.1)	0.4 (0.8)	2.8 (1.5)	2.7 (2.3)	3.5 (1.5)	1.7 (2.1)

*$P < 0.05$ P values were calculated by one-way ANOVA and χ^2-test. AD, Alzheimer's disease; BMI, body mass index; DLB, dementia with Lewy bodies; MCI, mild cognitive impairment; MIX, mixed type dementia; MMSE, Mini-Mental State Examination; TUG, Timed Up & Go; VD, vascular dementia.

MCI 321.1 ± 107.7, MIX 289.4 ± 79.2 and VD 359.2 ± 107.5). Although there were significant differences in BMI and waist circumferences among disease groups, with both indices being higher in VD and MIX, post-hoc analysis failed to find a significant difference between specific groups. The percentage of elderly people living alone did not vary among the groups. Care rank in MCI was lower than in the other groups.

A total of 70 patients had not applied for LTCIP certification (rank 0). When patients were divided according to care rank (Table 2), there was no overall tendency for increased age to be associated with higher care rank, although patients in ranks 3, 4 and 5 were significantly older than patients in care rank 0. There was a clear tendency that the higher the care rank, the worse the MMSE score and frailty indices, with the exception of MMSE scores from care ranks 0 to 3. Neither waist circumference nor BMI differed among care ranks. The percentage of patients living alone differed significantly according to care rank; beyond rank 4, very few patients lived alone. In contrast, there were also fewer patients in rank 0 who lived alone. When ranks 0, 1–2 and 3 were analyzed separately, patients in rank 0 were younger and less likely to live alone than

those in rank 3 (data not shown), although they had similar levels of cognitive impairment (Table 2).

Finally, we analyzed factors that correlated with care rank by multiple regression analysis. In this analysis, patients in rank 0 were excluded, as this rank was related to non-cognitive and non-physical factors (age and living arrangement), as described earlier. The analysis showed that MMSE, grip strength and living arrangement were independent predictors of care rank (Table 3).

Discussion

In the present report, we presented the distribution of care ranks determined according to the Japanese LTCIP certification in outpatients of a memory clinic, and the relationship between these ranks and conventional indices of cognition and frailty. Although LTCIP certification is carried out through a complex comprehensive assessment system consisting of two independent pathways, one by a certified assessor and one by an attending physician,[5,6] the present results showed a strong correlation between the results of this

Table 2 Relationship between care ranks and clinical and demographic variables

Care rank	0	1–2	3	4	5	6–7	P-value
n	70	18	48	31	22	12	
Age (years)							
Mean (SD)	75.3 (6.8)	79.8 (4.7)	80.1* (6.1)	79.6* (7.1)	83.5* (5.8)	80.5 (6.7)	<0.001
Sex							
Female	41	11	35	21	14	10	0.466§
Male	29	7	13	10	8	2	
Female (%)	58.6	61.1	72.9	67.7	63.6	70.6	
MMSE							
Mean (SD)	21.9 (4.9)	23.1 (3.3)	21.1 (4.1)	17.4*†‡ (5.6)	14.1*†‡ (6.6)	8.6*†‡§ (4.2)	<0.001
TUG (s)							
Mean (SD)	12.2 (5.0)	13.2 (4.7)	14.3 (5.7)	16.4* (8.0)	17.6* (6.8)	21.9*†‡ (7.6)	<0.001
Grip strength (kg)							
Mean (SD)	20.3 (8.2)	18.8 (6.9)	15.7* (6.8)	14.1* (4.5)	12.7* (5.5)	9.6*† (5.8)	<0.001
BMI (kg/m2)							
Mean (SD)	22.8 (3.3)	22.0 (3.9)	22.2 (3.8)	22.5 (3.3)	21.7 (3.2)	21.9 (3.7)	0.806
Waist circumference (cm)							
Mean (SD)	84.2 (7.7)	87.3 (11.4)	83.5 (10.3)	83.9 (8.4)	82.8 (7.0)	82.8 (12.6)	0.681
Living arrangement							
Living alone	7	7	15	3	0	1	<0.001§
Other	63	11	33	28	22	11	
Living alone (%)	10	38.9	31.3	9.7	0	8.3	

*$P < 0.05$ versus 0, †$P < 0.05$ versus 1–2, ‡$P < 0.05$ versus 3, §$P < 0.05$ versus 4. P-value was calculated by one-way ANOVA and χ^2-test ($). BMI, body mass index; MMSE, Mini-Mental State Examination; TUG, Timed Up & Go.

Table 3 Factors correlated with care rank on multiple regression analysis

Independent variable	Care rank ($R^2 = 0.41$)	
	β	P
Age (years)	−0.09	0.324
Sex (male)	0.05	0.624
Education (years)	0.06	0.465
MMSE score	−0.49	0.001
Grip strength (kg)	−0.27	0.005
TUG (s)	0.14	0.105
Living alone	−0.18	0.03

β, Standard partial regression coefficient; MMSE, Mini-Mental State Examination; TUG, Timed Up & Go.

assessment expressed as care rank and simple conventional indices. As those with dementia and related disorders are the largest population requiring care, this simple assumption could be beneficial for daily clinical practice and also useful in comparing care assurance systems among countries. We found specific tendencies among disease groups. DLB patients were frailer and had higher care ranks despite a smaller decline in cognitive function as measured by MMSE score than AD patients. DLB patients might be frailer than AD patients, because DLB often accompanies Parkinsonism. Another explanation is that disability of DLB patients might not be highly associated with MMSE. A recent report shows relative preservation of MMSE scores in DLB patients despite overall severity of the disease.[19] MCI patients showed, as expected, better cognitive and physical function concomitant with a lower care rank when compared with dementia patients.

Most developed countries have introduced care assurance systems, although these systems differ significantly among countries because of factors including their history, nationality, culture and economic status. Countries differ in many aspects, including assessment systems, check-points for assessment, people responsible for assessment, number of levels of care required, source of funding (tax or insurance), severity of condition for those certified to receive care, how patients with dementia are taken into account, methods of care supply (in-kind, cash or personal budget), existence of a care management system and types of care services provided.[3,4] Although it is difficult to determine which care system is more appropriate in each country, it is essential to know the relationship between fundamental abilities of patients and possible care supply in order to carry out international comparisons of the care supply to dementia patients.

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In the present study, we used MMSE as the index of cognitive function, because it is a widely used cognitive assessment tool worldwide and is easy to administer.[16] We used TUG and grip strength as the indices of frailty, because these assessment tools are simple and often used for assessment.[17,18] The present results showed that the higher the level of care required, the lower the MMSE, the longer the TUG and the weaker the grip strength. Intriguingly, these results are in line with recent reports that both cognitive function and frailty are intimately related during the clinical course of dementia.[20-24] There might be several reasons why TUG was not significantly associated with care ranks in the present multiple regression analysis. First, as there are few patients in the present study cohort who suffer from gait disturbance as a result of hemiparesis or musculoskeletal disease, which are popular causes of dependency, TUG might not have been related to care ranks in our analysis. Second, because TUG is a complex marker affected by not only muscle weakness, but also balance and executive functions, sarcopenia as represented by grip strength might be more important to determine care ranks in cognitively impaired elderly patients. Third, we might not have had a sufficient power to detect the significance of TUG in the present cohort.

When we look more closely at the results, the correlation between care levels as certified by the LTCIP and simple indices of cognition and frailty was not clear from ranks 0 to 3, although it was apparent at the care needs level (ranks 3–7). Instead, the present data suggest that age and living arrangement have a significant effect on patients in care ranks 0–3. As far as we know, there are no reports showing that younger dementia patients are more reluctant to use care services than older patients. However, in the future, it should be considered whether younger dementia patients might be reluctant to use care services or whether the actual contents of these care services do not match their needs. It is also important to think about living arrangements. In the current series, only one patient who lived alone had a care rank beyond 4, suggesting that dementia patients with higher care needs find it difficult to live alone. In contrast, people in the lowest level, rank 0, were also less likely to live alone than those in other ranks. These patients were those who had not applied for certification, irrespective of their cognitive and physical abilities, and a significant proportion of such patients would have been provided care by informal caregivers. In the Japanese LTCIP, all care services are in kind and cash payments do not occur. Future studies must therefore consider how to estimate the contribution of informal caregivers.[25,26]

The following limitations were recognized. We did not assess ADL and IADL of patients, and because these factors might be related to cognitive and physical abilities, direct assessment would provide more information for analysis. We also did not assess BPSD despite the fact that this is included in the first stage assessment of care level certification and should accordingly have a certain effect on care need.[5,6] Although the patients in the present study were treated appropriately in terms of BPSD, including an assessment of BPSD would give more information to construct simple explanatory models of care ranks. Finally, this was a cross-sectional study of outpatients of one memory clinic. A further multicenter study is required to confirm the results obtained.

As the number of dementia patients is anticipated to increase dramatically, it is important to establish social support systems in all countries. What kinds of services and what extent of such services are required for dementia patients in various stages of the disease? How much are we prepared to pay for providing these services? To consider these issues, international comparisons are necessary. Despite the influence of age and living arrangements, the present correlations between certified care levels, which reflect appropriate available benefits, with simple cognitive and physical parameters could contribute to international comparisons and to improvement of care systems.

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Disclosure statement

None of the authors have a personal or financial conflict of interest with regard to this manuscript.

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Original article

Identifying cognitive dysfunction using the nurses' rapidly clinical judgment in elderly inpatients

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ABSTRACT

Background/Purpose: The aim of this study was to examine the relationship between nurses' clinical judgment on cognitive function by fall risk assessment and mini-mental state examination (MMSE) scores in elderly inpatients.
Methods: We studied 61 consecutive hospitalized patients who received both comprehensive geriatric assessment (CGA) and fall risk assessment at the Department of Geriatric Medicine in Kyoto University Hospital from January 2006 to June 2010. During the fall risk assessment at admission, primary nurses evaluated the cognitive function by four items (with or without disorientation, impaired judgment, lack of comprehension, and memory loss), while a trained clinical assistant performed CGA including MMSE. Patients were divided into three groups according to the MMSE scores. The association between the four items of judgment by nurses and MMSE scores was then studied.
Results: The mean age was 80.1 years and 55.7% of the patients were female. The percentage of patients judged to have impaired judgment, lack of comprehension, and memory loss was higher in patients with lower MMSE scores (impaired judgment, p for trend = 0.001; lack of comprehension, p for trend = 0.043; memory loss, p for trend = 0.001). The percentage of patients judged to have at least one of the four abnormalities was also significantly higher in patients with lower MMSE scores (p for trend <0.001). However, no significant relationship was found between disorientation and the MMSE scores. Further, nurses could not detect impaired cognition by the four items in one-third of the patients with mild impairment determined by MMSE.
Conclusion: These data indicate that a comprehensive evaluation using all the four items on cognitive impairment is more effective in detecting cognitive impairment in elderly than using individual items, although one-third of cognitively impaired elderly patients may miss detection despite the use of the four items. Better approaches should be developed to identify cognitively impaired elderly patients by nurses.

1. Introduction

Falls are one of the most common complications of elderly in hospitals, with rates per 1000 patient-days estimated between 1.5 and 7.0,[1–3] and approximately 30% of those lead to physical injury, with 2.4–6.8% being serious.[4,5] Falls are associated with cognitive dysfunction, and approximately 60% of the elderly with cognitive impairment fall annually; this incidence is approximately twice

higher than those without cognitive impairment.[6–10] The increase of elderly population and demented patients in hospital can therefore lead to an increase in falls and fracture events. Accordingly, it is important for nurses to assess cognition in elderly patients to prevent such complications.

Many fall risk screening tools are used as part of fall prevention programs in hospitals. Available screening and fall risk assessment tools used in different settings have been subjected to systematic reviews that reveal considerable differences in practicability and validity, thus raising the question of their usefulness.[11,12] To identify high-risk patients for falls in institutionalized settings, our hospital developed a fall risk assessment tool. For the assessment, nurses collected information on age, history of falls, visual and hearing

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